

PAINT and VARNISH

THE TECHNICAL MAGAZINE FOR MANUFACTURERS OF PAINT, VARNISH, LACQUER AND OTHER SYNTHETIC FINISHES



☆
ZIRCO

cuts drying time

You've seen drying tests before. The four panels in the untouch photo tell the ZIRCO story better than mere words. The panel on the left was coated with a conventional outside house paint containing ZIRCO — the other three with paint containing conventional drier systems. The ZIRCO panel dried in 12 hours. Compare the ZIRCO results with the others, then try ZIRCO yourself.

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AUGUST
1958

RCI announces

ISOPHTHALIC ACID ALKYDS



Through "creative chemistry", RCI is the first to offer you alkyd resins made from isophthalic acid. This new line of resins holds great promise for you in new surface coating developments for tomorrow's market.

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Test 3 RCI isophthalics in your laboratory. RCI is now offering *laboratory samples* of three basic isophthalic alkyds to cover both trade sale and industrial applications. "On stream" production of these new SUPER-BECKOSOLS is not many months away, so now is the time for you to evaluate these new raw materials . . . to compare them with your existing standards. Write us for specifications and samples of the three initial isophthalic SUPER-BECKOSOLS (forerunners of a host of new products). And please state whether your primary interest is in trade sale or industrial finish applications.



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PAINT and VARNISH *Production*

NEXT ISSUE

Factors influencing the un-rubbed glossiness of metal lacquers will be featured in the September issue. This article discusses the work done to demonstrate and record the relative effects of variables on the glossiness of a nitrocellulose lacquer.

(REG. U.S. PATENT OFFICE)

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(Established in 1910 as The Paint and Varnish Record)

VOL. 45

AUGUST, 1955

NO. 9

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MONROE ALTER
Ass'l. Editor

A. L. BENDER
Production Manager
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Circulation Manager

PHILIP J. SEAVEY
D. P. MACPHERSON
JONES & LYNCH
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Petrochemicals-For New Raw Materials

AT THE Fourth World Petroleum Congress held recently in Rome, J. P. Cunningham of the Shell Chemical Company reported that by 1956 natural gas and products from oil refinery operations will be used in at least 50 percent of the production of chemicals of all types in the United States.

The gigantic growth of petrochemicals had its beginning with World War II when as a nation we were in sudden need of synthetic rubber. Raw materials from petroleum sources provided the answer.

In the post war period that followed, production of petroleum chemicals rose rapidly and, according to recent statistics released by the Tariff Commission, the output of crude products from petroleum and natural gas in 1954 was 19,941 million pounds compared with 11,147 million pounds in 1953, an increase of some 16 percent.

It has been estimated that there are some 140 companies engaged in the production of petrochemicals with a product value of some 2.8 billion dollars.

Sharing in this market are materials for the manufacture of synthetic rubber, plastics, coatings, fibres, detergents, insecticides, fertilizer, explosives, and antifreeze.

One cannot overemphasize the importance of petrochemicals to the coatings industry. For example, practically all of the solvents employed by the paint industry are of petroleum origin.

These include both the aliphatic and aromatic types and such solvents as alcohols, esters, ketones, and ether alcohols. Such important synthetic resins as cellulose, vinyls, acrylics,

ureas, epoxys, and many alkyds are derived from petroleum. And more recently as synthetic oil based on butadiene (petroleum derived) has shown considerable promise in industrial paints that exhibit hardness, high gloss, and resistance to alkalis, dilute acid, water, and harsh chemical solvents.

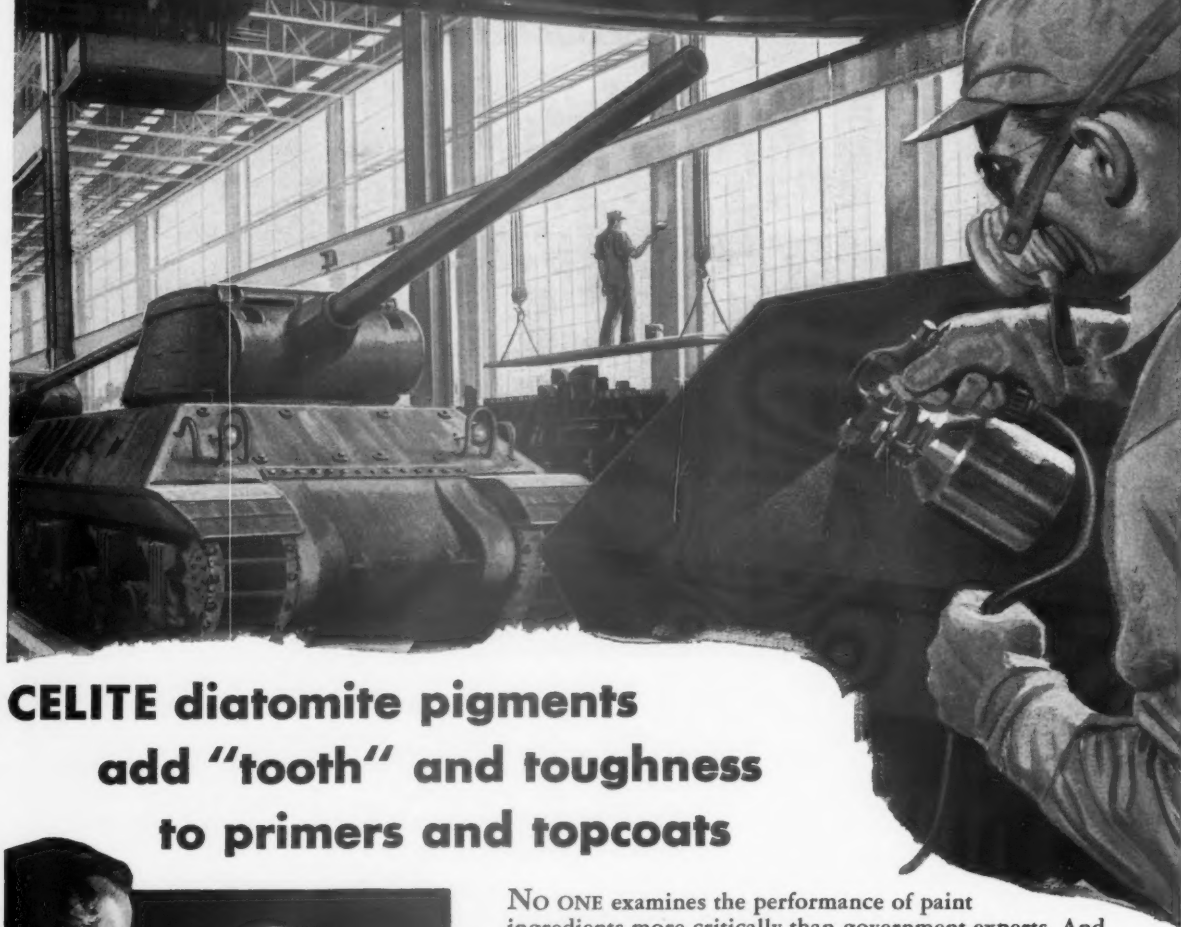
Many paint latices can be traced to petroleum. Monomers, such

as styrene, substituted styrene, vinyl acetate, vinyl chloride, vinyl ethers, acrylics and methacrylic esters, are all products of the petrochemical industry. Plasticizers, driers, additives, intermediates, and even carbon black owe their origin to petroleum or natural gas.

As the petrochemical industry make plans for the future, research plays a dominant role in its development. Out of this research will come many new chemicals, some of which will find a niche in the coatings industry. It is, therefore, conceivable that with such rapid growth and progress envisioned for petrochemicals, many of the raw materials used in today's coatings could become obsolete within the next decade.



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Photomicrograph reveals Celite's jagged edges which provide ready adhesion of paint to any surface.



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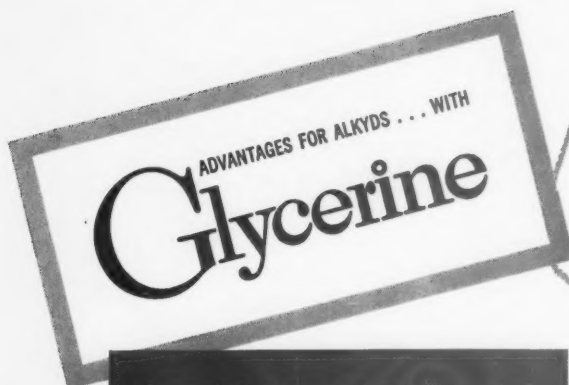
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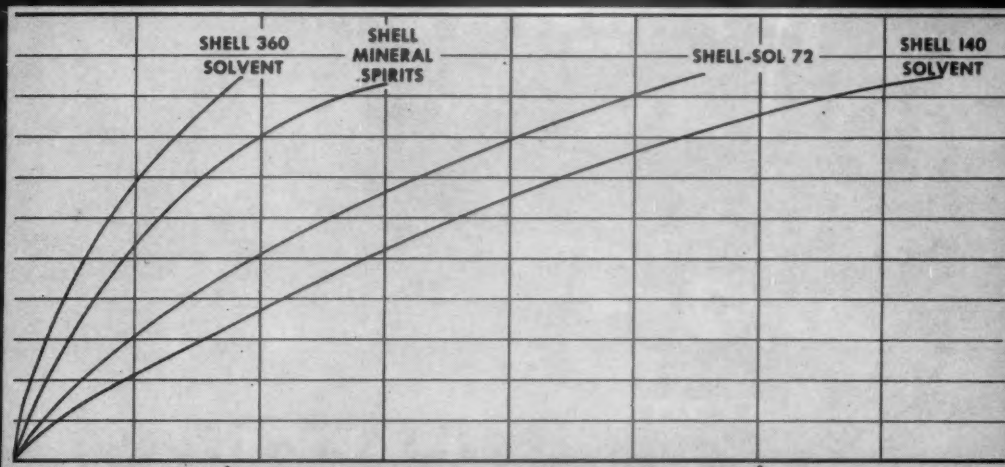


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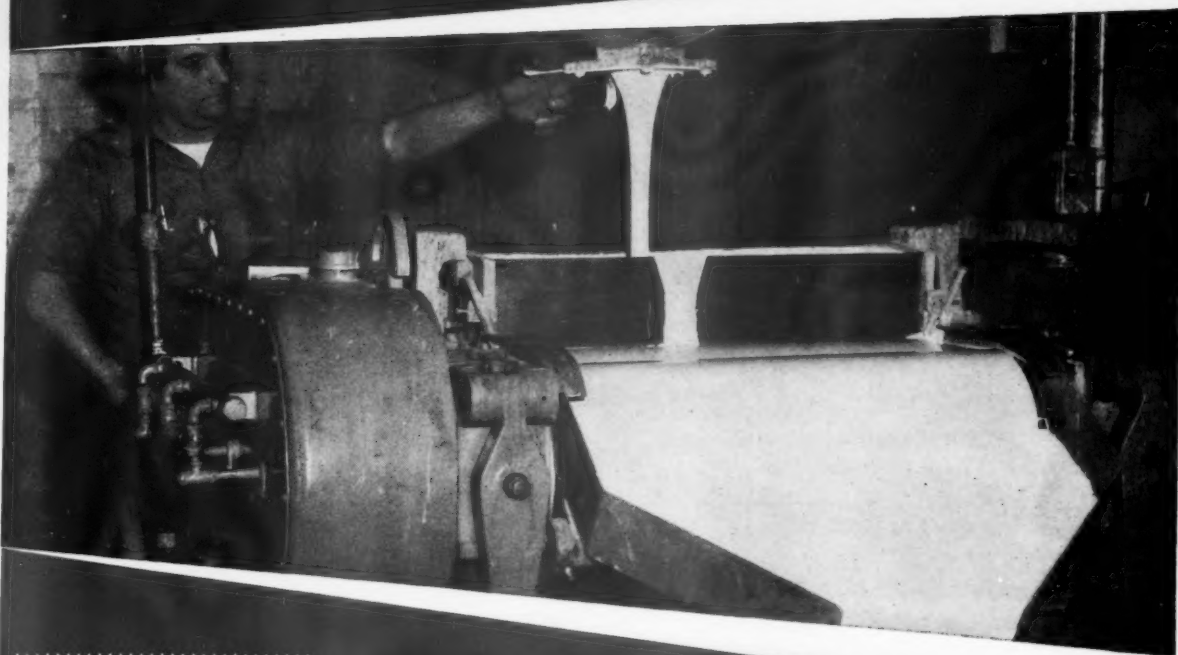
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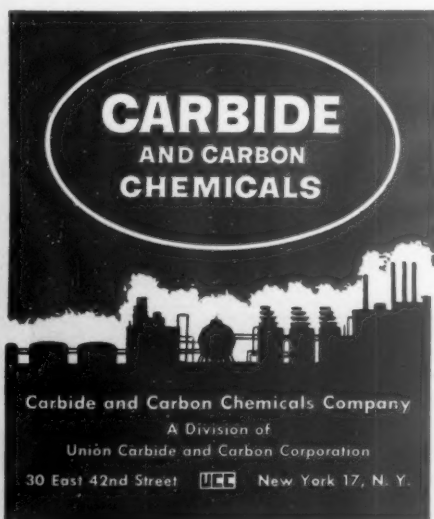


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TALL OIL NEWS

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DMA Tests Useful in Determining Completeness of Unitol-Maleic Adduct

Several procedures are available for the production of maleic modified Unitol vehicles. A good method of preparation consists in the formation of the Unitol-maleic adduct, followed by esterification with the polyol.

To prevent formation of insoluble material, particularly when esterified with higher polyols such as PE, the maleic should be completely reacted with the Unitol to form the adduct prior to the addition of polyol. Complete adduct formation with maleic and Unitol is obtained in a short time at 450° F. A good test for checking completeness of the adduct formation is Kappelmeyer's DMA (dimethylaniline) test, described below (cf. Maleic—Treated Oils; C.P.A. Kappelmeyer and J. H. Van der Neut, *Paint, Oil and Chemical Review*, August 31st, 1950, p. 11).

Procedure

DMA TEST: A little varnish is dropped into each of two spots of a spot plate. Several drops of DMA are mixed into one of the spots (the other spot is used as a standard). A reddish coloration in the spot treated with DMA indicates the maleic has not reacted completely.



DMA test at Battelle Memorial Institute.

UNITOL G-7 Fills Need for Inexpensive Light-Colored Tall Oil

Vehicle Characteristics and Film Properties of PE Ester and D. C. O.—Maleic Varnish

	PE Ester	20 Gallon D.C.O. Varnish
Percent NVM in MS	70	50
Hellige Comparator Color	6-	5-
Gardner-Holdt Viscosity	H	E-F
Acid No.	11	10
Cotton-Free Time (hrs.) (a)	2-3	2-3
Tack-Free Time (hrs.) (b)	8-9	9-11
Sward Hardness 24 hrs.	2-4	4-6
48 hrs.	8	10-12
7 days	34-38	30-32
Gardner 60° Angular Gloss (c)	95-97	95

The Unitol G-7 used in the above vehicles had a color of 7+ (Hellige Comparator). Film thickness for the vehicles tested was 0.95±0.1 mil.

(a) Cotton-free time is measured by placing panel at a 45° angle and allowing dental cotton balls to roll over the surface of the film. If the balls do not stick to the film, it is considered dust free or cotton free.

(b) Tack-free time measured by Zapon Tack tester.

(c) The gloss was measured on clear films that were drawn down on a panel that had previously been coated with a flat black (0 gloss).

This prevents the steel panel from interfering with the gloss of clear films (clear films on steel have a higher gloss due to reflectance of the steel).

AWARDS OFFERED FOR TALL OIL RESEARCH

Three monetary awards have been announced by the Tall Oil Association to recognize and encourage the publication of papers based on original research leading to new and improved applications of tall oil or tall oil products.

The first award is \$500; the second, \$250; the third, \$100. For complete information, inquire Awards Committee, TALL OIL ASSOCIATION, 122 East 42nd Street, New York 17, N. Y.

RESEARCH ESTABLISHES COLOR ADVANTAGES IN VARIOUS TALL-OIL VEHICLES

New opportunities to utilize refined tall oils in whites and light tints again are highlighted by recent studies of Union's Unitol G-7 conducted by the Battelle Memorial Institute.

Unitol G-7 can be used in the formulation of end products or coatings where, until now, rigid color requirements have made tall oil impractical.

Formulations and Cooking Procedure of Unitol G-7 Vehicles

(Typical PE Ester And D.C.O.—Maleic—PE Varnish)

UNITOL G-7—PE ESTER:	
Unitol G-7	940 grams
Technical Pentaerythritol	110 grams
	1050 grams
Water of Reaction	50 grams
Theoretical Yield	1000 grams

Cooking Procedure

Heat the Unitol G-7 and pentaerythritol (PE) to 560° F. in a 2-liter flask and hold at this temperature until the acid number is reduced to 10. This requires about six hours at 560° F. When this acid number is reached, cool to 350° F. and thin to 70% nonvolatile material with mineral spirits.

UNITOL G-7—MALEIC—D.C.O. 20 GAL. VARNISH:

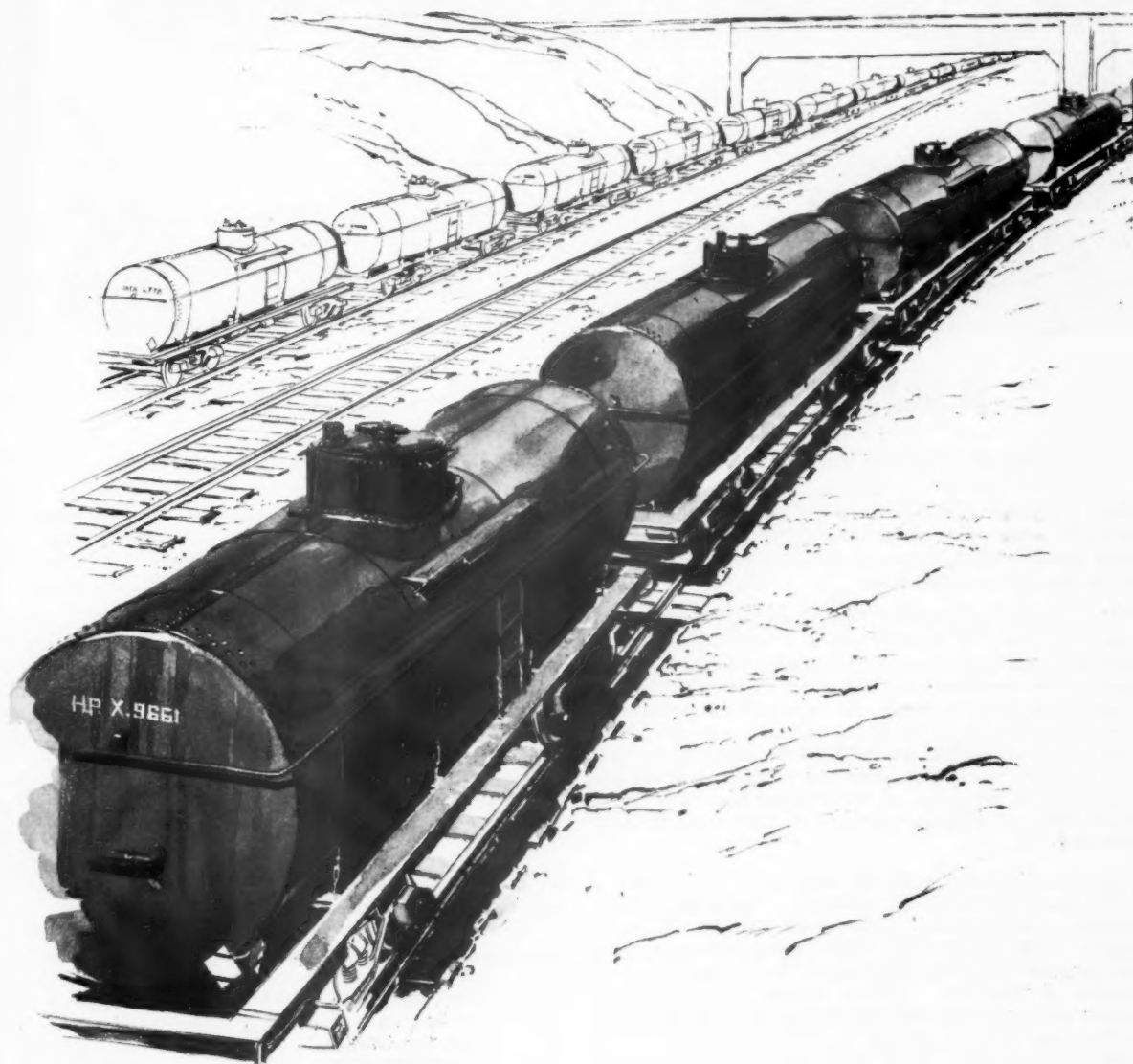
Unitol G-7	639 grams
Maleic Anhydride	15 grams
Technical Pentaerythritol	87 grams
Dehydrated Castor Oil	296 grams
(Baker's Castung 103 GH)	
	1037 grams
Water of Reaction	37 grams
Theoretical Yield	1000 grams

Cooking Procedure

Heat the Unitol G-7 to 450° F. in a 2-liter flask and then add the maleic anhydride. Hold at this temperature until a negative dimethylaniline test is obtained. At this point, add the remaining ingredients. The temperature is then raised to 560° F. and held until a Gardner-Holdt viscosity of G at 50% nonvolatile material in mineral spirits is reached. It usually takes about two hours at 560° F. to obtain this viscosity. At this point, cool to 350° F. and thin to 50% NVM in mineral spirits.

Dependable . . .

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Cargill

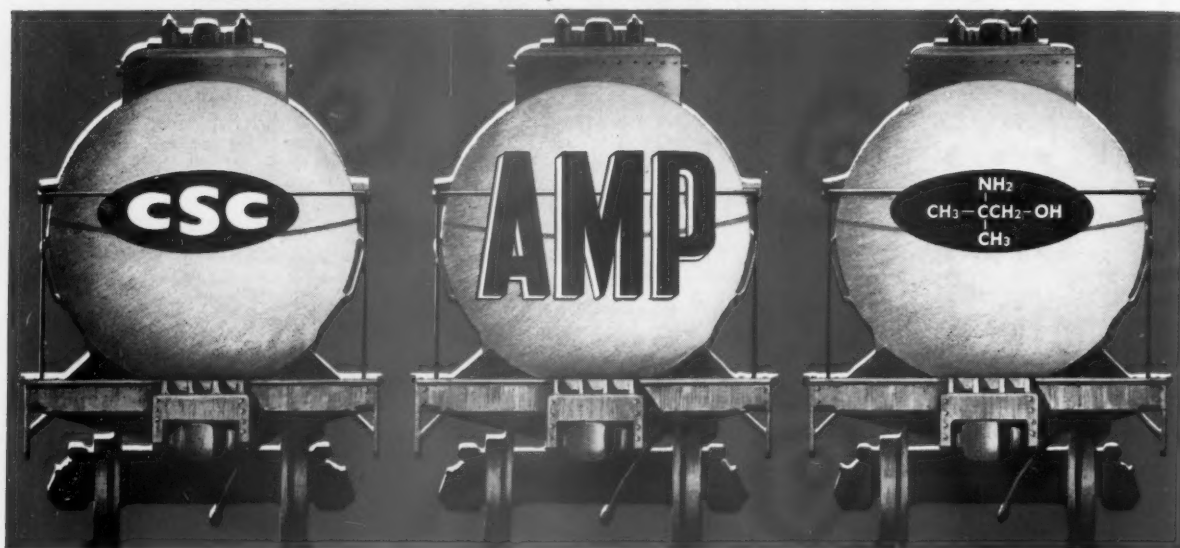
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AMP oleate is a powerful emulsifying agent for water-wax emulsions. Its effectiveness in lower concentrations than are required for comparable results with other widely used amine soaps makes AMP oleate an economical and desirable emulsifying agent. At relatively low concentrations of AMP oleate, the water-wax emulsions are stable and unchanged after repeated freeze-thaw cycles and heat stability tests. High gloss and excellent leveling are characteristic properties of AMP oleate floor wax emulsions when proper concentrations of AMP and oleic acid are used.

The higher fatty acid soaps of AMP are powerful emulsifying agents for use in such materials as cleaners, polishes, dressings, self-polishing floor waxes and emulsion-type paints. AMP's moderately high boiling point minimizes evaporation loss and objectionable fumes during manufacture of emulsions — without detracting from desirable water resistance and durability of film. With its advantage of low combining weight and its ability to emulsify a wide range of materials, AMP may solve your emulsifying problem.

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Readily undergoes a wide variety of reactions. AMP forms substituted amides with esters, anhydrides and acyl

halides. Also reacts with many other compounds including alkyl halides, aldehydes, ketones, and carbon disulfide. AMP can be used in the synthesis of efficient surface-active agents and detergents, and vulcanization accelerators for rubber.

Also suggested for synthesis of dyestuffs, photographic developers, and pharmaceuticals. Investigate the many ways in which AMP can help improve your products or processes.

PHYSICAL PROPERTIES

Molecular Weight	89.14
Boiling Point, °C	165/60mm
Melting Point, °C	30-31
Specific Gravity at 20/20°C	0.934
pH of 0.1M Aqueous Solution at 20°C	11.3
Solubility in Water at 20°C, g/100 ml	Completely Miscible

SPECIFICATIONS

Neutral Equiv.	88.5-91.0
Color, APHA, max.	20
Water, by wt., max.	0.8%
Distill. Range	156°C - 177°C
Below 161°C max.	10%
Below 168°C max.	5%
Odor	Characteristic
Non-volatile matter by weight, max.	0.005%

OTHER AMINOHYDROXY COMPOUNDS

AB (2-Amino-1-butanol) $\text{CH}_3\text{CH}_2\text{CHNH}_2\text{CH}_2\text{OH}$

AMPD (2-Amino-2-methyl-1, 3-propanediol)
 $\text{CH}_2\text{OHC}(\text{CH}_3)_2\text{NH}_2\text{CH}_2\text{OH}$

AEPD (2-Amino-2-ethyl-1, 3-propanediol)
 $\text{CH}_2\text{OHC}(\text{C}_2\text{H}_5)_2\text{NH}_2\text{CH}_2\text{OH}$

TRIS AMINO (Tris[hydroxymethyl]aminomethane) $(\text{CH}_2\text{OH})_3\text{CNH}_2$



Write for samples and Technical Data Sheet No. 18.

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CHEMICALS

THE "COLD MIX" VARNISH TECHNIQUE

By
S. H. Richardson*

WHEN Jean Felix Watin gave the first technical description of the paint and varnish industry in 1733, varnishes consisted essentially of naturally occurring resins, such as copal, congo, dammar, kauri, amber and rosin, dissolved or dispersed in linseed oil together with driers. Beginning in 1900, at the turn of the century, attempts were made to utilize products of phenol-formaldehyde reaction as substitutes for shellac. While a satisfactory shellac substitute was not obtained, ramifications of this work culminated in the introduction of the first oil soluble 100 per cent phenolic varnish resin. This unmodified phenolic resin combined with improved tung oil cooking techniques led to a major change in the nature of varnish making. Varnishes are heat processed or cooked to: 1) disperse or dissolve the resin in oil, 2) body the vehicle so that the coating film may be applied at a practical viscosity yet develop a sufficiently viscous film upon evaporation of the solvents. Among other things, this is to prevent sagging or run-off. When tung or oiticica oils are used in varnishes of this type, cooking at a sufficiently high temperature is required

to prevent the varnish film from drying with a matte, crystalline surface, commonly called gas checking.

This extremely short background on the history and theory of varnish preparation will serve as an introduction to a startling new concept in surface coatings technology—the preparation of var-

nishes without cooking by the "cold-mix" technique. This method, developed by Bakelite Company's laboratories and introduced at the 1954 Paint Industries Show, is the first practical innovation in varnish making procedure in many years.

Resin solutions have been used for a considerable time in com-

Figure 1
Formula Suggestion
VF-1922

Resin Solution

FORMULA	Lb.	Gal.
BR-9400	100	11.0
Mineral Spirits	135	20.8
99% Isopropanol	15	2.3
THEORETICAL YIELD	250	34.1

PROCEDURE:

Dissolve the resin in the solvent by tumbling in a resin churn or by heating in a steam jacketed kettle or an alkyl still.

PROPERTIES:

Viscosity	— G-L
Non-Volatile	— 40%
Color Gardner	— 6-12*
Specific Gravity	— 0.890 (7.4 lbs./gal.)

*Depending on method of solution preparation; heating darkens the resin solution.

*Mr. Richardson is connected with Bakelite Laboratories, Bakelite Co., Div. of Union Carbide and Carbon Corp., New York, N. Y.

The term "Bakelite" is a registered trade-mark of Union Carbide and Carbon Corp.

Figure 2

Formula Suggestion

VF-1924

33-Gallon Tung-Kettle Bodied Linseed Oil

FORMULA:

	Lb.	Gal.
BR-9400	100	11.0
Tung Oil	102	13.0
*Bodied Linseed	160	20.0
Mineral Spirits	378	58.0
Isopropanol	15	2.3
THEORETICAL YIELD		104.3

*Viscosity Z7

PROCEDURE:

Prepare a 40 per cent solution by dissolving 100 pounds of BR-9400 in 135 pounds of mineral spirits and 15 pounds of isopropanol. Add to this resin solution, slowly with stirring, the raw tung oil. Once the resin is dispersed in an equal weight of oil, the remaining materials may be added quite rapidly.

PROPERTIES:

Viscosity	— D
Non-Volatile	— 48%
Color-Gardner 1933	— 7
Specific Gravity	— 0.870 (7.25 lbs./gal.)

PERFORMANCE:

(With the addition of 0.3% Pb, 0.03% Co and 0.015% Mn calculated as metals on the weight of oil present.)

Drying:	Tacky-set to touch
1 hour	Slight tack
2 "	Faint tack
3 "	Dry
5 "	
Gas Checking Oven	— None
Skimming (½ full 8 oz. jar)	— None

Figure 3

Formula Suggestion VF-1908

25-Gallon Tung-Kettle Bodied Linseed Oil

Spar Varnish

FORMULA:

	Lb.	Gal.
BR-9400	100	11.00
Tung Oil	147	18.75
*Bodied Linseed		
(Low Acid Number)	50	6.25
Mineral Spirits	222	34.20
Isopropanol	15	2.30
THEORETICAL YIELD		534
*Viscosity Z9		72.50

PROCEDURE:

Prepare a 40 per cent solution by dissolving 100 pounds of BR-9400 in 135 pounds of mineral spirits and 15 pounds of isopropanol. Add to this resin solution, slowly with stirring, the raw tung oil. Once the resin is dispersed in an equal weight of oil, the remaining materials may be added quite rapidly.

PROPERTIES:

Viscosity	— D-E
Non-Volatile	— 55.6%
Specific Gravity	— 0.884 (7.37 lbs./gal.)
Color Gardner 1933	— 10

PERFORMANCE:

(With the addition of 0.3% lead, 0.03% cobalt and 0.015% manganese calculated as metals on the weight of oil present.)

Drying:	Tacky set to touch
1 hour	Faint tack
2 "	Print free
4 "	
Skimming (½ full 8 oz. jar)	— None
Zinc Oxide Reactivity	— None
Gas Checking Oven	— None
Kauri Reduction:	— Passed 100%
	— Failed 110%
	— 8 hrs. O.K.
Resistance to 5% NaOH at 20° C.	

bination with highly bodied linseed or dehydrated castor oils in the preparation of paints. However, there has been little interest in preparing varnishes by this technique because the resins available had very low solution viscosities or poor room temperature solubility in mineral spirits and vegetable oils. Furthermore, the few resins which did overcome these basic disadvantages were unable to provide any gasproofing of tung or oiticica oils, the most important oils in varnish formulations. A laboratory evaluation of many 100 per cent phenolic varnish resins revealed that "Bakelite" resin BR-9400 produced solutions of high viscosity which were compatible with raw and bodied oils. In addition, this resin also has been found to have the ability to gas-proof tung and oiticica oils *without heat treatment*. While much of this development work has been pointed toward tung oil "cold-mix" varnishes, this oil is not required for solubility and any drying oil may be used in this technique.

"Bakelite" phenolic resin BR-9400 was introduced to the paint and varnish industry in 1947. Outstanding in cooking speed, drying speed, and gas-proofing ability, this resin is now used in many applications where formerly a combination of two or more resins was essential. Through this new "cold-mix" technique, the usefulness of this resin is increased.

Base Solution

The "cold-mix" varnish-making method consists of dissolving BR-9400 in a suitable solvent or solvent combination, adding the oils and driers and mixing well. The base resin solution, VF-1922 shown in Figure 1, is prepared easily by any reasonable means of mixing. Heat such as obtained in a steam-jacketed kettle or an alkyd still will give a faster solution but is not essential to the process. Breaking the resin into small pieces will facilitate solution. The base solution is lightest in color when heat is not employed; however, the solution color has no discernible effect on either the color of the finished varnish or the color of the dried film. The viscosity of the resin solution generally falls within

Figure 4

Formula Suggestion VF-1909

17-Gallon Tung-Kettle Bodied Linseed Oil
Floor Paint Vehicle

FORMULA:

	Lb.	Gal.
BR-9400	100	11.0
Tung Oil	94	12.0
*Bodied Linseed Oil	40	5.0
Mineral Spirits	161	24.7
Isopropanol	15	2.3
THEORETICAL YIELD	410	55.0

*Viscosity Z7; Acid Number 8.

PROCEDURE:

Prepare a 40% solution by dissolving 100 pounds of BR-9400 in 135 pounds of mineral spirits and 15 pounds of isopropanol. Add to this solution, slowly with stirring, the raw tung oil. Once the resin is dispersed in an equal weight of oil, the remaining materials may be added quite rapidly

PROPERTIES:

Viscosity	— H
Non-Volatile	— 57.1%
Specific Gravity	— 0.894 (7.45 lb./gal.)
Color Gardner 1933	— 10

PERFORMANCE:

(With the addition of 0.3% lead and 0.03% cobalt calculated as metals on the weight of oil present.)

Drying:

1 hour	Tacky
2 "	Faint Tack
4 "	Print Free

Skinning (½ full 8 oz. jar)	— None
Zinc Oxide Reactivity	— None
Gas Checking Oven	— None
Kauri Reduction	— Passed 50%
	— Failed 60%
Resistance to 5% NaOH at 20° C.	— 8 hrs. O.K.

the range of G to L (Gardner). Variations in solution viscosity apparently have little effect on the viscosity of the finished varnish since identical varnishes of the same solids content but prepared from base solutions of varying viscosities exhibit comparable final viscosities.

The original formulations called for 90 parts by weight of mineral spirits to 10 parts by weight of isopropanol. Since the introduction of this "cold-mix" technique, continuing development work has

evolved additional information on solvents and solvent combinations that can be used successfully. Excellent "cold-mix" varnishes have been prepared in the laboratory using mineral spirits with a kauri-butanol value of 44 as the sole solvent. This base solution, however, has a viscosity of approximately Z-6 and must be used warm. A solvent system that has given good results consists of 90 parts by weight of a straight run aliphatic hydrocarbon with a flash point above 100 deg. F. and 10 parts by weight of n-butyl alcohol.

Oils

The oils used in these varnishes are tung oil or oiticica oil and either bodied linseed or bodied dehydrated castor oil. After the solution of BR-9400 has been prepared, the tung oil is added slowly with continuous agitation. Once a weight of tung oil equal to the resin weight is added and the mixture is homogeneous, the remaining components of the "cold-mix" varnish can be added quite rapidly. While a 33-gallon tung oil-bodied linseed oil varnish is the longest oil length coating that has been tested in our laboratories (see VF-1924 in Figure 2), it is believed that almost any oil length is feasible. However, in mixed oil varnishes the maximum amount of tung oil that may be gasproofed is in the neighborhood of 13 to 18 gallons.

Formula Suggestion VF-1908, a 25-gallon tung-kettle bodied linseed oil spar varnish shown in Figure 3 is a basic formulation for a durable "cold-mix" varnish. While this formula contains tung oil and bodied linseed oil, effective results have been obtained using dehydrated castor oil or oiticica oil. Test panels coated with VF-1908 and exposed for 6 months at 45 deg. south on Florida land racks show no checking, cracking or peeling. The film still affords excellent protection to the maple panels and the retention of gloss is excellent. Substitution of the high flash point aliphatic hydrocarbon—n-butyl alcohol thinner combination in VF-1908 gives a varnish that is recommended for the *Maple Flooring Manufacturers Association* specification for a heavy duty-type finish.

Optimum gloss in enamels based on "cold-mix" varnishes has been obtained through the use of a kettle bodied linseed oil with an acid number ranging from 8 to 12. However, in instances where moderate reactivity with certain pigments is shown by varnishes based on this oil, a vacuum bodied linseed with an acid number of 3 or less can be used without materially affecting the gloss. A 17-gallon tung-kettle bodied linseed oil varnish, VF-1909 shown in Figure 4, is suggested as a basic paint vehicle.

Figure 5

Formula Suggestion EF-1910

Maroon Floor Paint

FORMULA:

	Pounds	Gallons	Percentage By Weight
Synthetic Red Iron Oxide	434.7	10.65	38.74
Zinc Oxide	23.0	0.32	2.05
Aluminum Stearate	2.4	0.27	0.21
BR-9400	160.5	17.67	14.30
Raw Tung Oil	150.9	19.28	13.45
Z7 Kettle-Bodied Linseed Oil	64.2	8.03	5.72
Mineral Spirits	258.4	39.68	23.04
Isopropanol	24.1	3.69	2.15
24% Lead Drier	2.7	0.28	0.24
6% Cobalt Drier	1.1	0.13	0.10
THEORETICAL YIELD	1122.0	100.00	100.00

ROLLER MILL GRINDING PROCEDURE: Grind the pigments in the tung oil, bodied linseed oil and $4\frac{1}{4}$ lb. of mineral spirits. Blend into this paste 401 $\frac{1}{4}$ lb. of BR-9400 solution made by dissolving 160.5 lb. of BR-9400 in 216.65 lb. of mineral spirits and 24.1 lb. of isopropanol.

Then work in the driers.

Note: VF-1909 is the number assigned to the blend of all the vehicle ingredients. If desired this can be prepared in advance and used in making a pebble mill grind.

PERCENTAGE COMPOSITION (by weight):

Pigment — 41%		Vehicle — 59%	
	Per Cent		Per Cent
Red Iron Oxide	94.5	BR-9400	24.2
Zinc Oxide	5.0	Raw Tung Oil	22.8
Aluminum Stearate	0.5	Z7 Linseed Oil	9.7
	100.0	Mineral Spirits	39.1
		Isopropanol	3.6
		Driers	0.6
			100.0

PROPERTIES:

Weight per Gallon	— 11.22 lb.
Pigment Volume Ratio	— 20%
Non-Volatile	— 74.5%
Viscosity	— 73 Krebs Units (150 gr. wt. at 77° F.).
Gloss	— 100 on 60° Glossmeter
Drying Time	— 1 hour — Set to touch
	— 6 hour — Dry
Reducing Thinner	— Mineral Spirits

Figure 6
Formula Suggestion EF-1938

Black Enamel

FORMULA:

	Pounds	Gallons	Percentage By Weight
Carbon Black	24.40	1.67	3.22
VF-1909	727.12	97.60	95.96
24% Lead Drier	2.97	0.31	0.39
6% Cobalt Drier	1.19	0.15	0.16
6% Manganese Drier	0.59	0.07	0.08
Anti-skinning Agent	1.48	0.20	0.19
THEORETICAL YIELD	757.75	100.00	100.00

PEBBLE MILL GRINDING PROCEDURE:

Grind the pigment and all of the vehicle until a good dispersion is obtained.

PERCENTAGE COMPOSITION (by weight):

Pigment — 3.22%		Vehicle — 96.78%	
	Per Cent		Per Cent
Carbon Black	100	VF-1909	99.15
		Driers and anti-skinning agent	0.85
			100.00

PROPERTIES:

Weight per Gallon	— 7.58 lb.
Pigment Volume Ratio	— 3.26%
Non-Volatile	— 58.49%
Viscosity	— 63 Krebs Units (100 gr. wt. at 77° F.)
Gloss	— 95 on 60° Glossmeter
Reducing Thinner	— Mineral Spirits

The gas test used in the experimental work is that described in paragraph 416.2, Federal Specification TT-P-141b. In this test the varnish is flowed out on a tin panel and drained in a nearly vertical position for 15 minutes. During the draining period, the gas flame, adjusted to a height of one-half inch, is burning in the oven. The panel is then placed in the oven, allowed to remain there for four hours and then examined for gas checking. The panels in the oven are supported by a slotted

metal rack at a 70 degree angle. The rack is 10 inches above the floor of the oven and the gas flame is 2 inches above the floor. The oven itself is 18 inches long, 12 inches wide, and 18 inches high.

Pigments

All standard pigments may be used with BR-9400 "cold-mix" varnishes to prepare enamels with exceptionally high gloss. These varnishes are non-reactive with basic pigments and enamels based

on them have good package stability.

Pigments may be ground in the varnish itself or pre-ground in the oil for reduction at a later date with the resin solution. Formula Suggestion EF-1910, made in the latter manner, has a gloss of 100 on a 60 deg. Gardner Glossmeter. This formula, a maroon enamel, is shown in Figure 5. Excellent gloss can also be obtained by pebble mill grinding the pigments in the complete vehicle. Laboratory batches of red, blue, green, yellow, black and gray enamels have been made in this manner. Glossmeter values all have been 98 or better. Formula Suggestions EF-1938 and EF-1939, black and gray enamels respectively, are shown in Figures 6 and 7.

Driers

The drying time of "cold-mix" varnishes consistently has been found to be faster than that of similar cooked varnishes. In spite of this fast dry, the resistance of clear varnishes to skinning is excellent. Any tendency of enamels to skin responds readily to small amounts of anti-skinning agent. Indications are that the drier content is quite important. The best combination developed to date is 0.3 per cent lead, 0.03 per cent cobalt, and 0.015 per cent manganese as metals based on the weight of oil present.

Applications

"Cold-mix" varnishes based on BR-9400 are recommended for durable floor varnishes, exterior primers and enamels, primer vehicles for magnesium and aluminum paints, spar varnishes, and baking primers and enamel vehicles.

In addition to these applications, the base resin solution can be utilized by varnish manufacturers in upgrading alkyds, ester gum and modified phenolic varnishes. Five per cent BR-9400 added as 50 per cent solution and based on the alkyd solids weight is being used to improve resistance to water spotting. Alkyd baking primers for automotive applications may have up to 10 per cent BR-9400 added to give more positive through-dry. The durability and

(Turn to page 74)



FLAME PHOTOMETRY AND SPECTROPHOTOMETRY

APPLICATION IN PAINT ANALYSIS AND CONTROL

By
David S. Cox

ULTRAVIOLET and infrared spectrophotometers have been widely used by research organizations and the paint industry for research purposes, principally in connection with vehicle investigations (1), however, until recently, little or no use had been made of these instruments for routine analytical control purposes.

In an effort to reduce the amount of time spent on routine control of raw materials and finished products, and at the same time increase the usefulness and scope of the analytical services, various instrumental methods were investigated. It was concluded that the combination of a Beckman Model DU Quartz Spectrophotometer, which could be used in the visible light region as well as the ultraviolet, with Photo-multiplier Attachment and Flame Photometer Attachment, would provide the maximum degree of usefulness in handling the anticipated analytical problems.

The operation of the flame photometer and spectrophotometer has

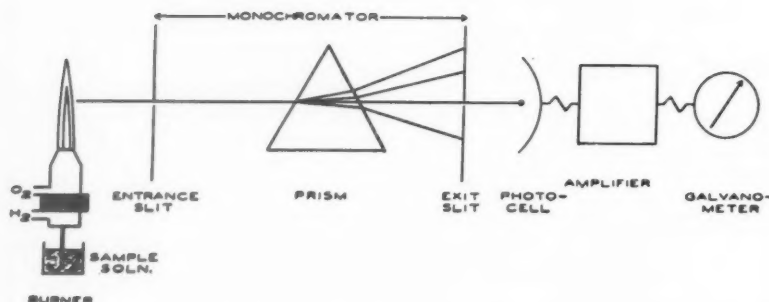


Figure 1. The flame photometer.

been described in detail elsewhere (2, 3, 4, 5) and only a brief outline will be given here.

Figure 1 illustrates in a simplified manner, the principle of the flame photometer. It consists essentially of an excitation source (the flame), a monochromator, a detecting element or photocell, an amplifier and a voltage-measuring device. The sample solution is aspirated directly into the base of the flame and the desired wavelength is isolated from the several that may be emitted. The intensity of this emission, which is a function of the concentration of the metal in the solution, is then measured by the detecting and amplifying sections of the instrument. The voltage produced

is thus a measure of the concentration of the metal in the solution. By comparing the sample of unknown concentration with a standard of known concentration, the concentration of the unknown can be calculated.

The spectrophotometer, Figure 2, is basically similar. The light source, either a tungsten or hydrogen arc lamp, combined with the monochromator, provides a source of monochromatic light of controlled spectral band width. After passing through a cell containing the sample solution, where it is partially absorbed, the light beam is detected and amplified as before. The voltage produced in this case, after comparison with a solvent blank, is a measure of the light

*Mr. Cox is connected with Methods Development Laboratory, The Sherwin-Williams Company of Canada, Ltd., Montreal, Quebec. This paper was presented to 9th Divisional Conference of the Protective Coatings Division, The Chemical Institute of Canada, Toronto-Montreal Feb. 24-25, 1955.

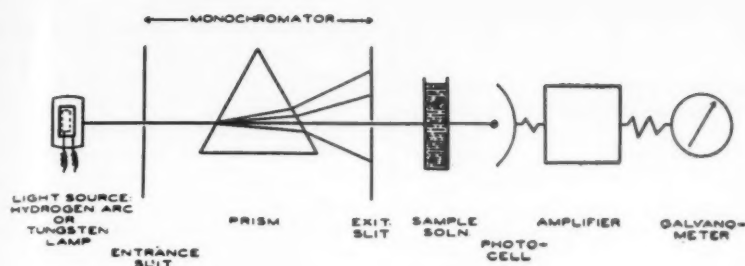


Figure 2. The spectrophotometer.

absorbed by the sample in the solution and is a function of its concentration. Again, by comparison with a standard solution of known concentration, the concentration of the unknown solution can be calculated.

Flame Photometry

The characteristic emission wavelengths and detection limits for various common metals determined flame photometrically are given in Table I. These figures, which were supplied by Beckman Instruments Inc., apply when using an oxy-hydrogen flame as the excitation source, a quartz monochromator and a photomultiplier tube operated at full sensitivity as the detecting device. More than forty metals can be determined satisfactorily, with zinc being the only common metal for which this method does not have adequate sensitivity. The sensitivity for sodium, potassium and calcium is very high, and until the relatively recent advent of the photomultiplier tube, these were the only metals for which the flame photometer was used. Even now the use of the flame photometer for metals other than these is not widespread. The literature contains very few methods which are directly applicable to materials encountered in the paint industry.

The advantages of the flame photometer are primarily its speed, accuracy and reproducibility. In accuracy and sensitivity it is at least as good as the usual chemical methods, and for alkali metal determinations it is far superior. Its use is, of course, restricted to metal determinations. It can be used for the analysis of driers, pigments, miscellaneous chemicals and finished products. The results compare favorably with those

that is necessary to analyze a drier is dilution in a suitable solvent mixture. The emission can then be read directly and compared with that obtained for a standard sample of the drier in question. The procedure outlined in Table III is typical for most drier analyses. Metallic oxides, pigments and talcs usually only require to be dissolved in dilute acid before reading (Table IV). Some organic materials, such as varnishes, may have to be ashed and the residue dissolved in acid as shown in Table V. In any case, these procedures require a relatively small amount of time.

Qualitative analysis of unknown materials is another useful application of the flame photometer. By scanning the wavelength range and noting the positions of the emission peaks, the various metals present can be identified.

Interferences

No method of analysis is entirely free from the effects of interfering

Table I
Characteristic Emission Wavelengths
And Detection Limits For Some
Common Metals

	Wavelength Millimicrons	Detection Limit ppm.
Aluminum	396.2	4.0
	484.2	2.0
Barium	553.6	0.3
Cadmium	326.1	2.0
Calcium	422.7	0.003
	622	0.004
Cerium	481	2.0
Chromium	360.5	0.1
	425.4	0.1
	520.6	0.1
Cobalt	341.2	1.0
	350.2	2.0
Copper	324.8	0.01
Iron	373.6	0.3
	386.0	0.2
Lead	368.3	2.0
	405.8	2.0
Magnesium	371	0.1
Manganese	279.8	1.0
	403.3	0.01
Nickel	341.5	1.0
	352.5	1.0
Potassium	766.5	0.001
Silver	338.3	0.05
Sodium	589.3	0.0002
Tin	317.5	1.0
Titanium	497	0.3
	518	0.2
Zinc	213.9	500.

Table II
Comparison of Flame Photometric Results
With Those Obtained By Chemical Methods

Material	Flame Photometric	Chemical
Cobalt Octoate	5.97% Co.	5.97% Co.
Cobalt Octoate	6.00% Co.	5.96% Co.
Lead Naphthenate	24.51% Pb.	24.56% Pb.
Iron Oxide	83.6% Fe.	83.5% Fe.
Iron Oxide	76.1% Fe.	76.1% Fe.
Iron Oxide	80.9% Fe.	80.3% Fe.
Iron Oxide (synthetic)	99.5% Fe.	99.0% Fe.
Iron Oxide	84.5% Fe.	85.0% Fe.
Varnish	169 ppm. Mn.	163 ppm. Mn.

Table III
Flame Photometric Analysis of Calcium Driers

1. Weigh duplicate samples of 0.1 gms.
2. Dilute to 100 ml. volume with special drier solvent (2 parts benzene, 1 part alcohol, 1 part acetone).
3. Read the emission at 422.7 mu. against a similar solution made up from a gravimetrically analyzed sample of the same drier.

substances, and unfortunately flame photometry is no exception. Interferences can, and do, frequently occur. They can be due to the presence of other metals, for example, the interference by magnesium with the determination of calcium, calcium with the determination of titanium, iron and lead with chromium and so on, or interferences can occur due to the presence of non-metals or organic compounds, for example, many metals are affected by the presence of chloride ions. Interferences can be either positive or negative in effect. That is, some substances will increase the apparent emission of the desired metal, while others will lower it. There are several methods available for overcoming interferences, but not all are applicable in every case.

Reading the emission at a different wavelength is one method of overcoming interferences. This presumes that the metal has another characteristic wavelength of adequate sensitivity. Interferences which occur at one wavelength will not necessarily be present at another. A second method is further dilution of the solution, thus decreasing the concentration of an interfering metal to a point below its limit of detection. The

third, and most generally useful procedure is chemical separation of the interfering metal. For example, in determination of chro-

mium in lead chromate, the sample is dissolved in hydrochloric acid and the interfering lead can then be precipitated as lead sulphate by the addition of a little sulphuric acid, thereby being removed from the solution. A fourth, and also fairly general method, is to add to the standard solution an amount of the interfering material approximately equal to the amount of the material occurring in the sample. A fifth alternative is the use of a colorimetric procedure. A material which interferes in a flame photometric procedure will not necessarily interfere in a colorimetric one. The sixth method for overcoming the effects of interference is to make a correction using a curve similar to the one in Figure 3 which illustrates the correction of the chromium emission at 520.6 millimicrons for the presence of varying quantities of iron.

Colorimetry

Absorption spectrophotometric methods in the visible light region, in other words colorimetric methods, can be used for trace analyses of metals and other elements pres-

Figure 3. Correction curve for chromium in the presence of iron.

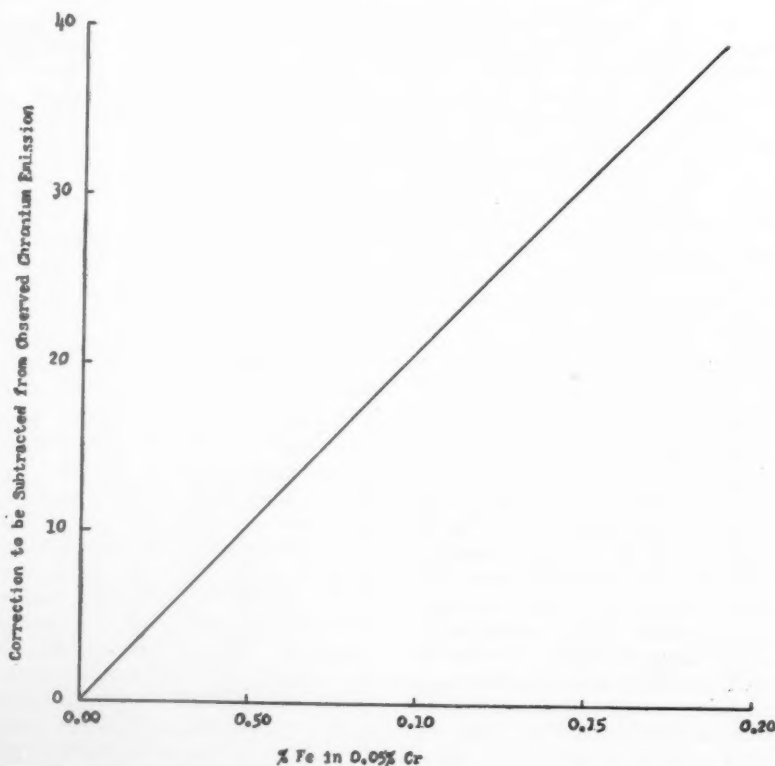


Figure 4. Ultraviolet absorption curves for various common drying oils.

Figure 5. Ultraviolet absorption curve for a typical odorless soya alkyl.

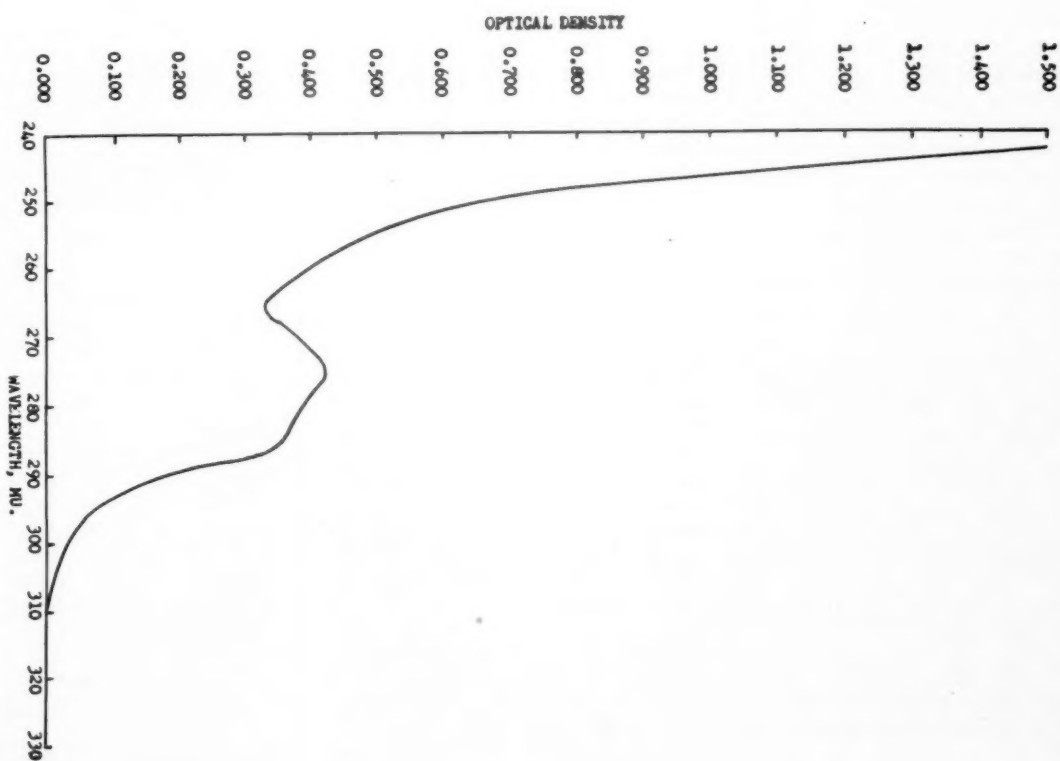
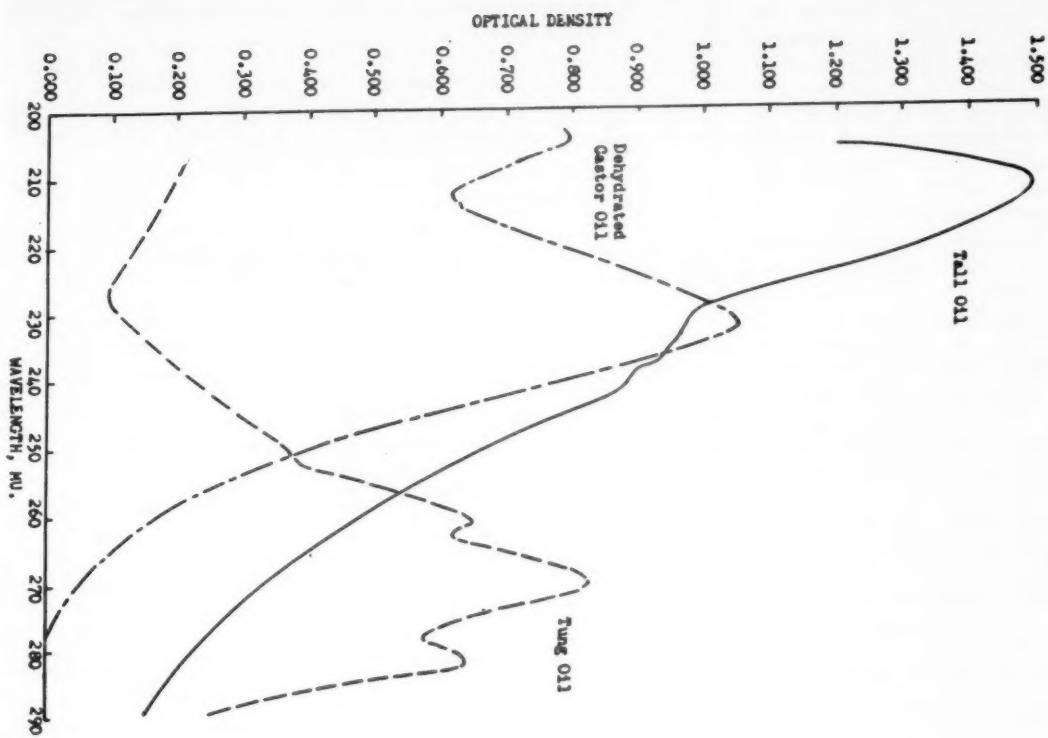


Figure 4. Ultraviolet absorption curves for various common drying oils.

Figure 5. Ultraviolet absorption curve for a typical odorless soya alkyd.

ent in quantities too small to be detected by the flame photometer. The colorimeter's main value is the accuracy with which it enables analyses to be done that would be difficult or impossible by regular chemical methods. Speed is not its great virtue. While some colorimetric methods are fairly rapid, the majority are slow. Apart from its use in trace metal determinations, the colorimeter is of great value for analyses involving zinc, arsenic, antimony and other ions which cannot be determined flame photometrically. The literature on colorimetric analysis is fairly extensive; only minor modifications to existing procedures being necessary in most cases to adapt them to materials of interest in paint manufacture.

Again, colorimetric methods are not without their sources of interference. The methods for overcoming interferences in colorimetric analyses are similar to those used in flame photometry. Of course, the more specific the color-developing reagent is for the metal being determined, the less of a problem will interference be.

Ultraviolet Spectrophotometry

Ultraviolet spectrophotometry is applicable in the main to doubly unsaturated, conjugated organic compounds. Table VI shows the commonest functional groups possessing characteristic absorption in the ultraviolet region. It constitutes a useful tool for solving problems which could not be approached in any other way.

An important use of the ultraviolet spectrophotometer is in the identification of unknown organic compounds. While not as universal in its application as the infra-red spectrophotometer for this purpose, it nevertheless finds considerable use, especially in the field of drying oils. By constructing an absorption curve for the unknown material and comparing it with the curves obtained for various known materials, positive identification can frequently be made. This procedure can be used to identify drying oils alone or in alkyd resins.

The various common drying oils each have well-defined characteristic ultraviolet absorption curves (Figure 4).

Table IV

Flame Photometric Analysis of Ferric Oxides

1. Weigh duplicate samples containing the equivalent of 0.5 gm. of iron.
2. Dissolve in 15 ml. of concentrated hydrochloric acid.
3. Dilute to 100 ml. volume with water.
4. Filter through a dry paper.
5. Read the emission at 386.0 mu. against a 0.5% standard iron solution containing 15 ml. of concentrated HCl per 100 ml. of solution. (The HCl is added to the standard to avoid interference from chloride ions in the sample solution).

TABLE V

Flame Photometric Determination Of Manganese in Varnishes

1. Weigh duplicate samples containing the equivalent of 10 mgm. of manganese.
2. Evaporate the solvent and ash the sample.
3. Dissolve the residue in 5 ml. of concentrated hydrochloric acid.
4. Dilute to 50 ml. volume with water.
5. Filter through a dry paper.
6. Read the emission at 403.3 mu. against a 0.02% standard manganese solution containing 10 ml. of concentrated HCl per 100 ml. of solution.

In the manufacture of alkyd resins, it is possible by ultraviolet absorption curves, to follow the progress of the reaction. A soya alkyd for instance, shows a peak at 275 millimicrons, the height of which varies with the cooking time. The longer the cooking time, the lower this peak tends to become. It is also possible to relate characteristic peaks, inflections and depressions in the curve with the oil type and length. In terms of an oil chemist's experience, this naturally can be related to the physical characteristics of the alkyd. By comparing the absorption curves of production batches of alkyds, criteria for minimum deviation from an acceptable standard can be set up. After accumulating performance data for a series of these production batches, the characteristics of the curves can be related to the behaviour of the alkyd in the final product, and hence a quality control program can be aided by the spectrophotometric characteristics.


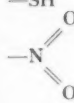
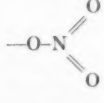

Figure 5 shows an ultraviolet absorption curve for a typical odorless soya alkyd. In this case the shape and $E_{1\%}^{1\text{cm}}$ value of the peak at 275 millimicrons can

be used as criteria of overall quality.

As far as routine control applications of the ultraviolet spectrophotometer are concerned, the most useful is the complete analysis of fats, oils and fatty acids for

(Turn to page 79)

TABLE VI
CHROMOPHORIC GROUPS
AND CHARACTERISTIC
WAVELENGTHS

	280 mu.
-OH	186
-SH	227
	366
	302
-C=C-	185
(-C=C-)₂	232
(-C=C-)₃	270
-C=C-C=O	217
	268

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PAINT

FLAME-RETARDANT PLASTICIZER for PROTECTIVE COATINGS*

FINDS APPLICATION IN

- NITROCELLULOSE LACQUERS
- ETHYLCELLULOSE LACQUERS
- SHELLAC
- ALKYD FINISHES
- EMULSION PAINTS

THE CURRENT tendency of state and local governments to tighten their requirements on flammability of materials and coatings used in public buildings and in private and public institutions reflects the growing awareness of the general public of the importance of reducing the hazards of fire.

This new awareness coupled with the long-standing industrial safety programs and the work of such organizations as the *Underwriters' Laboratory*, the *National Board of Fire Underwriters*, and *National Fire Protection Associates* has given new impetus to the development of fire-retardant chemicals. These fire-retardant chemicals can be used to reduce the flammability of protective coatings, synthetic resins, and textiles.

Already established as fire-retardant chemicals are such materials as the chlorinated paraffins and other halogenated aliphatics and aromatics, organo-phosphate such as tricresyl phosphate, and inorganic pigment type materials typified by antimony oxide. Recently introduced to the chemical process industry by *Celanese Corporation* is a dual-purpose flame retardant and flexibilizing agent, tris Beta-chlorethyl phosphate, called "Celluflex" CEF. A high-boiling, water-white liquid, this chemical exhibits exceptional flame-retardant properties due to the presence of both a phosphate radical and chlorine atoms in the molecule. Although still relatively new, this material has already been successfully tested in several applications relating to protective coatings, resins and plastics, and textile finishing. Table I lists some of the more important physical properties of this unique chemical.

*A report by R. J. Polack and E. H. Holmstrom, Chemical Div., Celanese Corp. of America.

PROPERTIES OF CELLUFLEX CEF

Physical state	Liquid
Acid number (mg KOH/g)	0.1
Boiling point (°C, 25mm)	214
Color (APHA)	20
Pour point (°C)	-60
Fire point (°F)	500
Flash point (°F)	420

Table I

"Celluflex" CEF is now being produced in LCL drum quantities in a semi-commercial production unit at Newark, New Jersey. Currently offered to the trade at a development price of 65c/lb., it is anticipated that the price will be reduced when large scale commercial production begins.

Nitrocellulose Lacquers

One of the first commercially successful applications for this material has been in the field of nitrocellulose lacquers. It is claimed that burning tests have shown the superiority of "Celluflex" CEF over tricresyl phosphate (TCP) in producing self-extinguishing films.

The effectiveness of this material indicates its potential usefulness in airplane dopes, marine finishes, cable lacquers, display lacquers, and furniture lacquers. The excellent color properties of this chemical permit its use in clear and pastel coatings where the use of pigment-type flame retardants is prohibited.

The flame retardancy effect of this material on nitrocellulose lacquers were tested by spraying wood panels with successive coats of lacquer until a heavy coating resulted. Three panels were prepared using the formulations in Table II.

Ingredient	Panel A	Panel B	Panel C
Nitrocellulose, RS $\frac{1}{2}$ sec.	31.4 g	31.4 g	31.4 g
Hard maleic ester gum	23.6 g	23.6 g	23.6 g
Plasticizing alkyd, non-drying	25.6 g	25.6 g	25.6 g
"Celluflex" CEF	19.4 g	—	—
Tricresyl phosphate	—	19.4 g	—
Dibutyl phthalate	—	—	19.4 g

Table II

Formulations used in fire-retardancy study.

A Bunsen burner flame was impinged for seven seconds at the lower edge of the panels inclined at a forty-five degree angle. Figure 1 illustrates how panel A extinguished itself within 3 seconds after the flame had been withdrawn. Panels B and C continued to burn. The flame propagation rate for panel B, con-

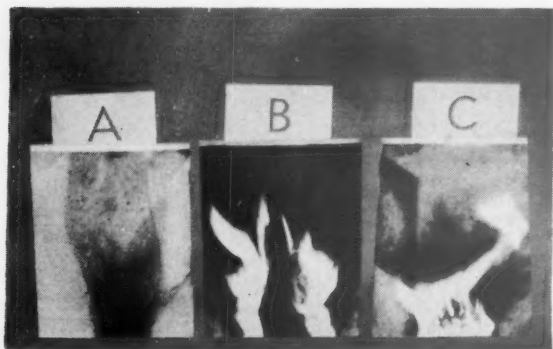


Figure 1. Three seconds after removal of the flame Panel A (Celluflex CEF plasticized nitrocellulose film) has already extinguished itself.

taining the tricresyl phosphate, however, was less than for panel C containing dibutyl phthalate as can be seen in Figure 2.

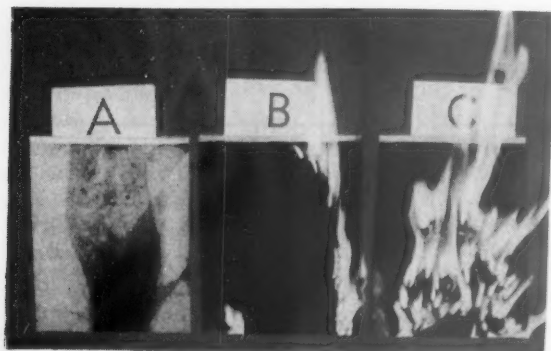


Figure 2. Fifteen seconds after ignition, flame-propagation rate on Panel B (TCP plasticized nitrocellulose film) is less than on Panel C (DBP plasticized nitrocellulose film).

The relative burned areas are shown in Figure 3. Note that the panel containing "Celluflex" CEF burned only where it was in contact with the flame. In the case of the TCP plasticized panel, approximately three quarters of the film was destroyed. The dibutyl phthalate plasticized film was completely destroyed.

Similar panels were prepared and completely consumed by keeping them in constant contact with a flame. The "Celluflex" CEF plasticized panels had a char from 5 to 10 times as thick as the other two panels.

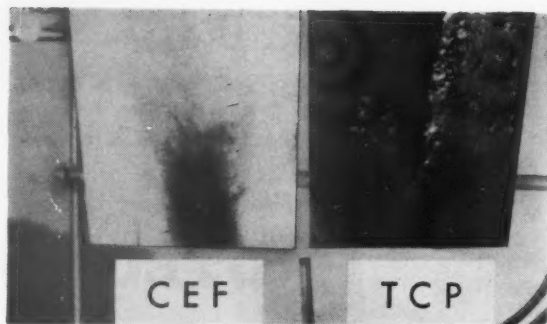


Figure 3. Relative burned areas for CEF and TCP, plasticized nitrocellulose films, are shown.

This suggests that a lacquer containing "Celluflex" CEF, if destroyed by the prolonged application of heat, will produce an intumescent residue that will afford a much greater insulating effect against further propagation of heat than would lacquers not containing this material.

No matter how effective a flame retardant, in nitrocellulose lacquers it is, of course, important not to sacrifice other properties ordinarily associated with good lacquer surfaces. The surface hardness of "Celluflex" CEF plasticized nitrocellulose lacquers as measured by the Sward Rocker is within the hardness range obtainable with tricresyl phosphate and dibutyl phthalate. The low temperature flexibility of CEF plasticized films is better than TCP, passing the $\frac{1}{4}$ inch mandrel test at minus 21°C where the latter failed. The light stability of films plasticized with "Celluflex" CEF is significantly better than TCP plasticized films and roughly equivalent to dibutyl phthalate plasticized films. In ultra-violet tests the use of CEF reveals no yellowing properties.

Ethyl Cellulose Lacquers

The excellent solvent action of this chemical on cellulose esters led to a screening of its effectiveness in ethyl cellulose cable lacquers. As expected, "Celluflex" CEF has excellent solvency for ethyl cellulose and films plasticized with it exhibit good low temperature flexibility, ultra-violet light stability, permanence, water resistance and surface hardness.

Hardness, ultra-violet stability, and low temperature properties were determined on a $\frac{1}{2}$ second RS nitrocellulose-hard maleic ester gum—"Celluflex" CEF ratio of 1:1:0.8. Cold water resistance of nitrocellulose films containing "Celluflex" CEF is better than those containing TCP or DBP. Less blushing occurs, with faster recovery.

In order to simulate cable lacquer use conditions, the flame-retardant effect of "Celluflex" CEF was determined by uniformly impregnating a heavy cotton string (0.36 g/ft.) with the lacquer. The string was then burned in a horizontal position in a draft-free atmosphere. The absence of a wire at the center of the insulation which would serve to conduct the heat from the area of combustion makes the conditions of this test considerably more stringent than would be encountered in actual practice. The flammability data is described in Table III and illustrates the reduced flammability of the formulations containing "Celluflex" CEF.

FLAMMABILITY OF ETHYL CELLULOSE CABLE LACQUERS

	48% Ethoxy				46% Ethoxy			
	1	2	3	4	5	6	7	8
Ethyl cellulose (48% Ethoxy).....	70	70	70	70	—	—	—	—
Ethyl cellulose (46% Ethoxy).....	—	—	—	—	70	70	70	70
Dibutyl phthalate (control).....	30	—	—	—	30	—	—	—
"Celluflex" CEF.....	—	30	—	—	—	30	—	—
2-Biphenyl dephenyl phosphate.....	—	—	30	—	—	—	30	—
Tricresyl phosphate.....	—	—	—	30	—	—	—	30
Burning rate (inches minute).....	3.9	2.5	3.0	2.9	4.0	2.4	3.0	2.9
Pick-up (% total weight).....	46	46	46	46	34	34	34	34

Table III

Shellac

Tests similar to those conducted on nitrocellulose lacquers were run on white and yellow shellacs. Heavy shellac coatings containing 5-10% "Celluflex" CEF applied to white pine panels and subjected to the flame of a Bunsen burner exhibited self-extinguishing properties comparable to those obtained with nitrocellulose.

Physical properties of shellac films are essentially unaltered by the addition of "Celluflex" CEF. Surface hardness is decreased somewhat but remains essentially satisfactory. The low temperature brittleness of shellac films plasticized with this material is decreased. Good compatibility without exudation is shown under ultra-violet light exposure. No change results in water resistance of "Celluflex" CEF plasticized shellac films.

Alkyd Finishes

Preliminary experiments were conducted with a 25% phthalic anhydride-pentaerythritol-soybean oil type alkyd to which "Celluflex" CEF was added in amounts equaling 5% and 10% of the non-volatiles. At each level this chemical proved to be effective in reducing the flammability of the films.

Flammability was tested by brushing white pine panels with three coats of the alkyd. The panels were allowed to air-dry between each coat for a period of twenty-four hours. A Bunsen burner flame was then applied to the panels for periods of 5, 10 and 15 seconds. The 5 and 10 second ignition tests failed to ignite either the alkyd films containing 5 and 10% "Celluflex" or the control film containing no "Celluflex" CEF. However, blistering and discoloration of the film containing this chemical was substantially less than the control as shown in Figure 4.

The use of the higher percentage of Celluflex CEF did not result in improved retardancy over the films containing only 5% "Celluflex" CEF.

Physical properties of the alkyd resin were markedly affected by the presence of this material. Although the presence of "Celluflex" CEF in the alkyd had no effect on water resistance it did affect the drying time adversely. The greater percentage of "Celluflex" CEF in the film, the greater the residual tack.

Similar tests conducted with a 32% phthalic anhydride-40/50 pentaerythritol/glycerine-soybean oil substantiated the results described above. It is

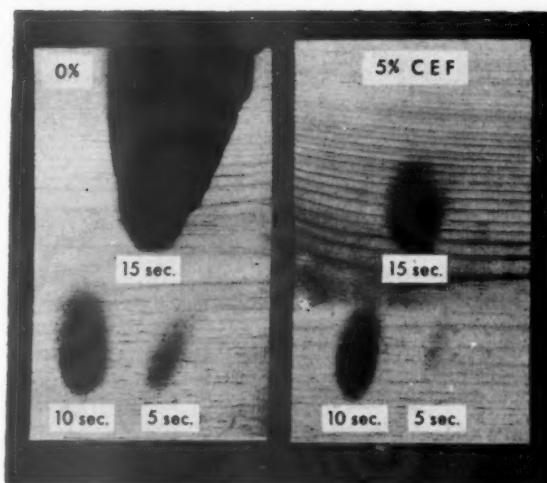


Figure 4. Results of burning test on alkyd films.

quite possible that good flame-retardant effects can be obtained with "Celluflex" CEF at a level substantially below the 5% level arbitrarily chosen for these preliminary tests. If this should be the case, it should be possible to minimize the adverse effect on the drying time exhibited by this chemical in these tests.

Emulsion Paints

Although this product is too new to have been evaluated in all emulsion paint systems, the preliminary results with polyvinyl acetate emulsions indicate its usefulness in this field of protective coatings. "Celluflex" CEF can be added directly to the emulsion with rapid agitation. No adverse affects on emulsion stability result.

Polyvinyl acetate films were drawn on ordinary kraft paper to a thickness of from 0.003 to 0.004 inches and tested according to ASTM D1230-52T on a U.S. Testing Company flammability tester using a butane flame. Films containing 10% of CEF based on the solids content of the emulsion are self-extinguishing after a 5 second ignition period.

By no means complete investigation of "Celluflex" CEF with polyvinyl acetate emulsions is being expanded to include evaluations in actual paint formulations.

(Turn to page 80)

WITH the trend toward the use of more and brighter colors, the Du Pont Company in making plans for the colorful years ahead sets up modern research facilities at its Newark, N. J. plant. This new laboratory is designed for continuing work on product and process improvement and for stepping up long-range research on new pigment colors. Research was formerly conducted at several locations on the plant and is now consolidated in the new building.

Research falls into two basic categories, according to Dr. J. Nelson Tully, laboratory director. These are:

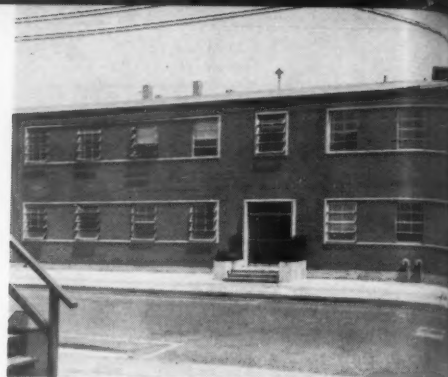
1. The relation of molecular and crystal structure to the properties of the pigment itself.
2. The chemistry and physics of small particles and their behavior in various applications such as textiles, coated fabrics, plastics, linoleum, floor tile, printing inks, packaging inks, paints and lacquers, and a range of automotive and industrial finishes.

The character of some of the work performed in this laboratory and the function of various pieces of equipment are depicted in the accompanying photographs.

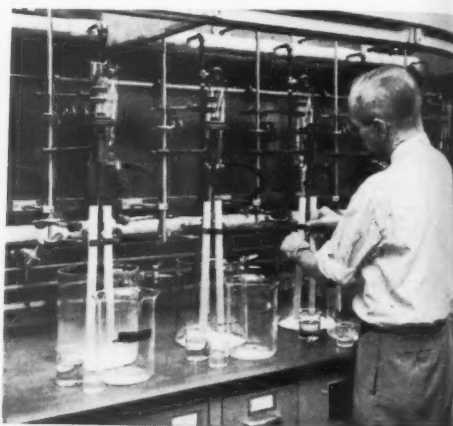
Operating differential colorimeter for color measure and control.



X-ray spectrophotometer with recording Geiger counter is used in analysis work.



Outside view of DuPont Pigment Laboratory Building.



Typical equipment for inorganic precipitation and AZO couplings.



Assembling equipment for organic synthesis.

Titration with automatic equipment.



NEWS

Nopco Chemical Buys Griffin Chemical Co.

Nopco Chemical Co., Harrison, N. J., has acquired the assets of the Griffin Chemical Co. of San Francisco, it was announced by Perc S. Brown, Director and Vice President in charge of Nopco's western operations. Mr. Brown stated that this is the initial



P. S. Brown

step in Nopco's planned further expansion by acquisition on the Pacific Coast.

Everett Griffin, who organized the Griffin Chemical Co. in 1935 and has guided its growth as a manufacturer of substantial tonages of polyvinyl acetate emulsion, petroleum sulphonates, naphthenic acid, emulsifiers and plasticizers, will be associated with Nopco at Richmond, Calif., in an executive capacity.

National Lead Forms British Company

National Lead Co. has announced the formation of Abbey Chemicals, Ltd., in London, England. The new firm will produce chemicals for industry which have found wide acceptance in the United States and are in increasing demand in England. Production at Abbey Chemicals' plant in Stratford is expected to begin by January.

Among the products to be manufactured are stabilizers and plasticizers for vinyl plastics, and gelling agents.

National Lead's subsidiary, Hoyt Metal Co. of Great Britain, Ltd., owns the majority interest in the new company, with F. W. Berk and Co., British chemical manufacturers, holding the remaining shares.

The sale of chemical products in continental Europe will be handled through National Lead Company's subsidiary, Titan Co. A/S.

Morehouse-Cowles, Inc. Holds Instruction School

Morehouse-Cowles, Inc. of Los Angeles, distributors nationally of Cowles Dissolvers, held a school of instruction June 3-4 at the Cowles Dissolver Co. plant at Cayuga, N. Y.



Technical classes were held, laboratory demonstrations made, and full scale production equipment runs with Cowles Dissolvers were staged for an audience of field representatives.

Photo shows field representatives who attended the conference. Top row, l to r: Joe Fitzgerald; Harry M. Gibb; F. H. Kamin; Frank Fish; Hugh F. Purcell; Fred Kamin; Page N. Hamilton;

Robert M. Booth. Second row: Ralph B. Frazier; Harold M. Van Horn; Glen Meyers; H. Benner; George E. Missbach, Sales Manager and Director, Morehouse-Cowles, Inc.; Chuck Myers; M. B. Sweet; Glen H. Morehouse, President Morehouse-Cowles, Inc.

Third row: John Sullivan; Myrv. Cron; Doug. Everett; Chan Withington; Harold McCullough; H. N. Meyer, General Manager, Cowles Dissolver Company; "Wag" LaBrant; John W. Meyers. Bottom row: D. L. Grubbs, Vice-President and General Manager Morehouse-Cowles, Inc.; R. Truesdale; Ray Meifert; Tom Brioux; Julius Baggiani; Rick Aldridge; H. C. Metzger.

Harshaw Chemical Buys Pigment Color Division

The Pigment Color Division of United Wallpaper, Inc. has been purchased by the Harshaw Chemical Co. through its subsidiary, Zinsser & Company, Inc. Manufacturing and laboratory facilities will be moved from Aurora, Ill., to the Zinsser plant at Hastings-on-Hudson, New York, in September.

The line of organic and oxide pigment dispersions will continue to be sold under the brand name "Auraspers Colors" through the agents currently serving the domestic market.

John W. Close, who has been Manager of United Wallpaper's pigment color operations will join the Harshaw organization to manage the sale of dispersed colors and will make his headquarters at Harshaw's sales office and warehouse in Chicago.

Dr. John F. Birmingham will join the Zinsser staff at Hastings-on-Hudson, where he will devote his time to research and development, as will Dr. Lyde S. Pratt, who has recently been retained by Harshaw as a consultant.

Company Name Changed

Vulcan Stamping & Mfg. Co. and Vulcan Tin Can Co., both having the same officers, management, sales department and offices, will henceforth be known as Vulcan Containers Inc. The change in name was made in the interests of better customer service and a more streamlined organization, according to Vern I. McCarthy, President.

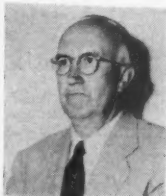
Gallowhur Appoints Goll

Gallowhur Chemical Corp., Ossining, N.Y., has appointed Milton Goll Associates, Livingston, N.J., as exclusive agents to market a new line of phenylmercury paint fungicides.

NEWS

Tung Oil Fellowship Established In USDA

An industry fellowship for research on tung oil has been established by the National Tung Oil Marketing Cooperative, Inc., at the Southern Utilization Research Branch of the U. S. Department of Agriculture's Agricultural Research Service in New Orleans, La.



L. L. Hopper

Lucien L. Hopper, Jr., of New Orleans, has been appointed by the cooperative to conduct the work of the fellowship. He will work under the general direction of Dr. Leo A. Goldblatt in the Oilseed Section of the Southern Regional Research Laboratory in New Orleans.

The object of the fellowship is to improve and extend the utilization of tung oil in paint and varnishes. The work to be done on tung oil will be integrated into the Southern Branch's broad program of research to maintain and extend the utilization of vegetable oils. It is hoped superior paints and varnishes having improved drying time, hardness, water resistance, and abrasion resistance will result from this research.

New Polyvinyl Resin Plant

A polyvinyl resin plant in Mendedia, Ill. will supplement to company's other plant in Plainfield, N. J., according to an announcement from Frank Greenwall, Pres. of National Starch Products, Inc.

Mr. Greenwall pointed out that "while the prime function of the new plant will be to produce polyvinyl emulsion, it is also planned to manufacture adhesives containing large proportions of the vinyl emulsions for the company's National Adhesives Division." The company plans to market this additional capacity of resin through its nationwide sales, warehousing and bulk handling set-up.



The 2nd Distributor Technical Conference of the Minerals & Chemicals Corp. of America was held May 30-June 3 at the company's facilities in McIntyre, Ga. Specific technical meetings were held for Edgar Products and Attapulugus Products in paints, plastics and adhesives. Photo shows, back row, l to r: A. W. Claxton; Peyton Wheeler; Dr. C. G. Albert; Browning Middleton; C. L. Zimmerman Co., Cincinnati; T. F. Reilley, Southern States Chemical Co., Atlanta; J. R. Wilcox and Henry Ford. Middle row, l to r: R. J. Drexel; H. A. Smith; Douglas Everett, Van Horn, Metz & Co., Inc., Conshohocken, Pa.; M.D. Beck, Commerce Petroleum Co., Chicago, Ill.; P. L. Blanchard, T. C. Ashley & Co., Boston; and F. L. Warren. Front row, l to r: O. E. Hempel; R. V. Dilley; S. R. Wright, J. W. Stark Co., Detroit; John Loud, Southern States Chemical Co.; Robert Voss; Cletus O. Martin; and E. E. Ross, Jr., T. C. Ashley & Co. Unless noted all are with Minerals & Chemicals Corp. of America.



M. C.
Londergan



J. F.
Broeker

John F. Broeker Retires, Londergan To Succeed

John F. (Jack) Broeker, Sales Promotion Manager of white pigments for Du Pont's Pigments Dept., retired in July after 35 years with the company.

He has been succeeded by Martin C. Londergan, technical specialist in the Sales Promotion Section.

Long a popular figure in the paint industry, Mr. Broeker's career began in 1920 when he joined the Grasselli Chemical Co. of Cleveland. He organized a laboratory there in 1925 and continued in paints and pigments work when Du Pont acquired Grasselli in 1928.

Mr. Broeker engaged in sales service work in Newark, N.J.; organized a paint research group at the Philadelphia laboratory of the Fabrics and Finishes Dept.; and worked on paint research and sales service at Du Pont's Newport plant between 1929 and 1940.

In 1940 he was appointed Sales Promotion Manager for white pigments.

Mr. Broeker is a member of the New York Paint and Varnish Production Club, the Philadelphia Paint and Varnish Production Club, the American Oil Chemists Society, the American Society for Testing Materials, the American Institute of Chemists, the Chemists Club of New York, and the Gallows Birds Society.

He was elected an Honorary Member of Committee D-1 at the annual meeting of the American Society for Testing Materials held in Atlantic City, N.J., in June.

Dr. Londergan joined the company in 1942 as a chemist and has worked in research and sales of white pigments. He is a member of the Chemists club, New York Paint and Varnish Production Club, the American Chemical Society, Sigma Xi, and Phi Kappa Phi.

Open Kansas City Plant

Missouri Solvents & Chemicals Co. has opened a new plant in Kansas City where solvents and chemicals from leading producers will be distributed from a new warehouse and bulk storage plant.

E. J. Saake will be in charge of the plant. He was formerly associated with the company's St. Louis office since 1947.

Make friends with Continental's steel containers

IN SOLID COLORS OR YOUR
OWN LITHOGRAPHED DESIGN

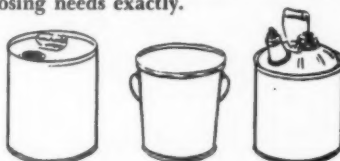
Air-tight lug cover **STEEL PAILS**

From air-tight lug covers to double-seamed bottoms, Continental steel pails comply strictly with all shipping regulations. Along with rugged protection, Continental containers give your product added sales appeal as well. Attractively lithographed with your name or trade mark, each container not only helps sell itself, but helps sell *all* your products as an integrated package "family". What's more, these re-usable pails will deliver your sales message long after the original contents have been emptied. Let Continental lug cover pails work for you. Call soon.



Why not fill all your steel container needs in one order? Continental makes a complete line of "Tripletite" paint cans, "F" style and conventional cans. We'll load in one freight car to save you money on warehouse space, shipping and inventory.

Call on Continental for flaring pails, closed head drums and utility containers. Sizes and styles available to fit your filling and closing needs exactly.



LEAK-PROOF AND SALESWORTHY

Sturdy lug cover steel shipping containers available in 2- through 12-U.S. gallon capacity in various gauges. Welded side seams and compound-lined covers meet ICC specifications. Lugs punctured for shipping tags. Heavy gauge wire bail handles. Side drop handles furnished on 7- through 12-gallon pails. Rugged body styles either straight or with one or two swedges. Cover can be fitted with pouring spouts to meet every need.



Also the tops in pouring spouts and closures

CONTINENTAL © CAN COMPANY

Eastern Division: 100 E. 42nd St., New York 17
Central Division: 135 So. La Salle St., Chicago 3
Pacific Division: Russ Building, San Francisco 4



**TAILOR-MADE
PACKAGE SERVICE**

"Are you rolling with your polyvinyl acetate paint-program?"

Celanese Plastics Division Technical Service
has the answers you need for exterior
paints, interior paints, primers...
with **Celanese* PVAc** resin emulsions

Polyvinyl Acetate paints are the most promising development in years. They have a price structure competitive with anything on the market. They are popular with the public because they offer easy application, fast drying, freedom from odor, elimination of prime coating and easy brush cleaning. They offer a market too big to miss—and growing larger by the minute.

Celanese PVAc Resin Emulsions are now in volume production. Both the homopolymer and copolymer types are available. These quality resins are processed by Celanese for all types of vinyl-latex paint formulating. Here is a supply source you can depend on—for speedy deliveries and stable prices. Fill out and return the coupon below for complete information.
Celanese Corporation of America,
Plastics Division, Box 165-H
290 Ferry Street, Newark 5, N. J.



Celanese Corporation of America, Plastics Division,
Box 165-H 290 Ferry Street, Newark 5, N. J.

Please send me New Product Bulletin ☐ NP-12 (Celanese Polyvinyl Acetate Emulsions for Paints); ☐ NP-14 (Celanese Polyvinyl Acetate Copolymer Emulsion CL-202 for Latex Paints);
☐ Samples of CL-100 and CL-202 Emulsions. I am interested in:
☐ Primers ☐ Interior Paints ☐ Exterior Paints

NAME _____

TITLE _____ COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

Celanese*
PLASTICS and RESINS

*Reg. U. S. Pat. Off.

NEWS

Southern Paint Club Awards Six Scholarships

Six scholarship winners have been announced by the Southern Paint and Varnish Production Club for the newly instituted fall course in Paint Technology to be given at the University of Florida at Gainesville.

The scholarships are in the amount of \$500 each. The course will be under the direction of Dr. W. H. Beisler, Head Professor of the College of Chemical Engineering.

The winners, judged by their grades and previous general records in school, are: Robert B. Agee, Roland S. Foster, and Allen E. Leybourne, of Jacksonville; and Gilbert M. Brown, George B. H. Speed, and Gordon K. Reil, of Gainesville.

Cuno Representatives

Control Equipment Co. of Atlanta, Ga. has been appointed exclusive sales representative by The Cuno Engineering Corp. to handle its line of industrial products which includes "Auto-Klean," "Micro-Klean" and "Flo-Klean" fluid and gas filters. The principals of this company, Robert P. and Charles L. Saunders, will cover Georgia, all of Florida except the northwest portion, eastern Tennessee and two counties in South Carolina.

George S. Edwards of Birmingham, Ala. has been appointed exclusive sales representative to handle the same line in Alabama, parts of western Florida and central Tennessee.

Du Pont Elects Director

David H. Dawson, Assistant General Manager of Du Pont's Textile Fibers Department, was elected a Director, Vice President and Member of the Executive Committee of the company. With his election, the number of Directors is increased from 29 to 30.

Mr. Dawson is 46 years old and has been with the company for 22 years.



New construction, involving a three-story addition to the soybean preparation plant completed by Archer-Daniels-Midland Co. at Mankato, Minn., in 1950, is expected to result in a new group of products to be manufactured from soybeans. First of the products will be soybean oil meal for hog and poultry feeds, an original company development.



DRAWING SAMPLE FROM TANK CAR. Samples are drawn from top, middle and bottom of car, and each tested independently. For each shipment, Sun keeps a record of the purity analysis—available for your reference, if desired.

High-Purity Sun Aromatics Aid Paint and Varnish Uniformity

**Toluene and Xylene tested in process
and even after loading into tank cars**

Fourteen times during and after the refining process, samples of Sun aromatics are brought to the laboratory to be tested for purity. These tests are the best practical assurance that the aromatics you receive are absolutely pure.

These aromatics are made in a new \$15 million Sun Oil Company refinery devoted exclusively to this use. Modern refining methods combine with rigid quality controls to maintain consistently high purity. This means you can more easily turn out end-products of constant uniformity and high quality—month in and month out. For detailed specifications and analysis data on Toluene or Xylene, write Dept. PV-8



DISTILLATION RANGE TEST. Each sample is tested under precise control and with extremely accurate measuring facilities. Samples must fall within the narrow boiling ranges specified in order to pass the test.



PARAFFIN TEST. Sun Toluene is guaranteed to contain less than 0.5% paraffins—substantially below the ASTM maximum of 1.5%. Samples normally contain no measurable paraffin whatever.

INDUSTRIAL PRODUCTS DEPARTMENT SUN OIL COMPANY

PHILADELPHIA 3, PA. • SUN OIL COMPANY LTD., TORONTO & MONTREAL
Refiners of famous High-Test Blue Sunoco Gasoline



for BUSINESS-BUILDING PERFORMANCE for



For ten years before 1949, all coatings on hopper walls of a giant dredge were failing within six months. They couldn't take the severe corrosive action of salt air and water, hydrogen sulphide fumes rising from dredged material, and the rough abrasive action of sand and silt emptied into and out of the hoppers. In fact the longitudinal steel girders had lost more than 30% of their thickness from corrosion and abrasion.

In 1949, a four-coat system based on BAKELITE Vinyl Resins was applied. It completely arrested the eating-away process. Recently, after over five years' service (10 times that of other coatings), renewed protection has been applied using the same type of tough, dependable coating.



Metal and masonry surfaces of the receiving dock of this mill plant had become very unsightly from peeling and blistering of ordinary paints. Service conditions, of course, were tough. As if weather extremes aren't bad enough, lactic acid and live steam add to the maintenance problem here.

Therefore, a coating based on BAKELITE Vinyl Resins was specified and sprayed on. It has sealed the porous masonry surfaces and even bridged scars and cracks. Results: the coating is bright and clean looking, with thorough resistance to moisture, acids, alkalis and other destructive agents.

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Brand R

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pendabl

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bigger a

BAKELITE

PAIN

formulating is easier with BAKELITE

"one-source service"

Over and over, outstanding performance indicates the kind of business-building service your coatings can give when they are based on BAKELITE Brand Resins.

By relying on BAKELITE as your major source you simplify purchasing; you know exact standards and are sure of uniform high quality; you have an extremely wide variety of resins to choose from; and you are sure of dependable service and technical help.

These are powerful benefits. Take advantage of them by making dependable BAKELITE Resins your base for bigger and better business.



BAKELITE COMPANY, A Division of Union Carbide and Carbon Corporation **UCC** 30 East 42nd Street, New York 17, N. Y.
The term BAKELITE and the Trefoil Symbol are registered trade-marks of UCC



COMPLETE TECHNICAL DATA

FORMULATIONS • PROCEDURES • PROPERTIES

BAKELITE is your one source of more different types of resins for coatings. There is technical data available on all these resins, and for formulating variations of each resin to obtain coatings with different properties. Fourteen sales offices throughout the country can render prompt service wherever you are located. Personnel trained in the development of resins and formulations, and processing techniques, provide technical assistance.

TAKE ADVANTAGE OF ONE-SOURCE BUYING

For the greatest number of types of resins

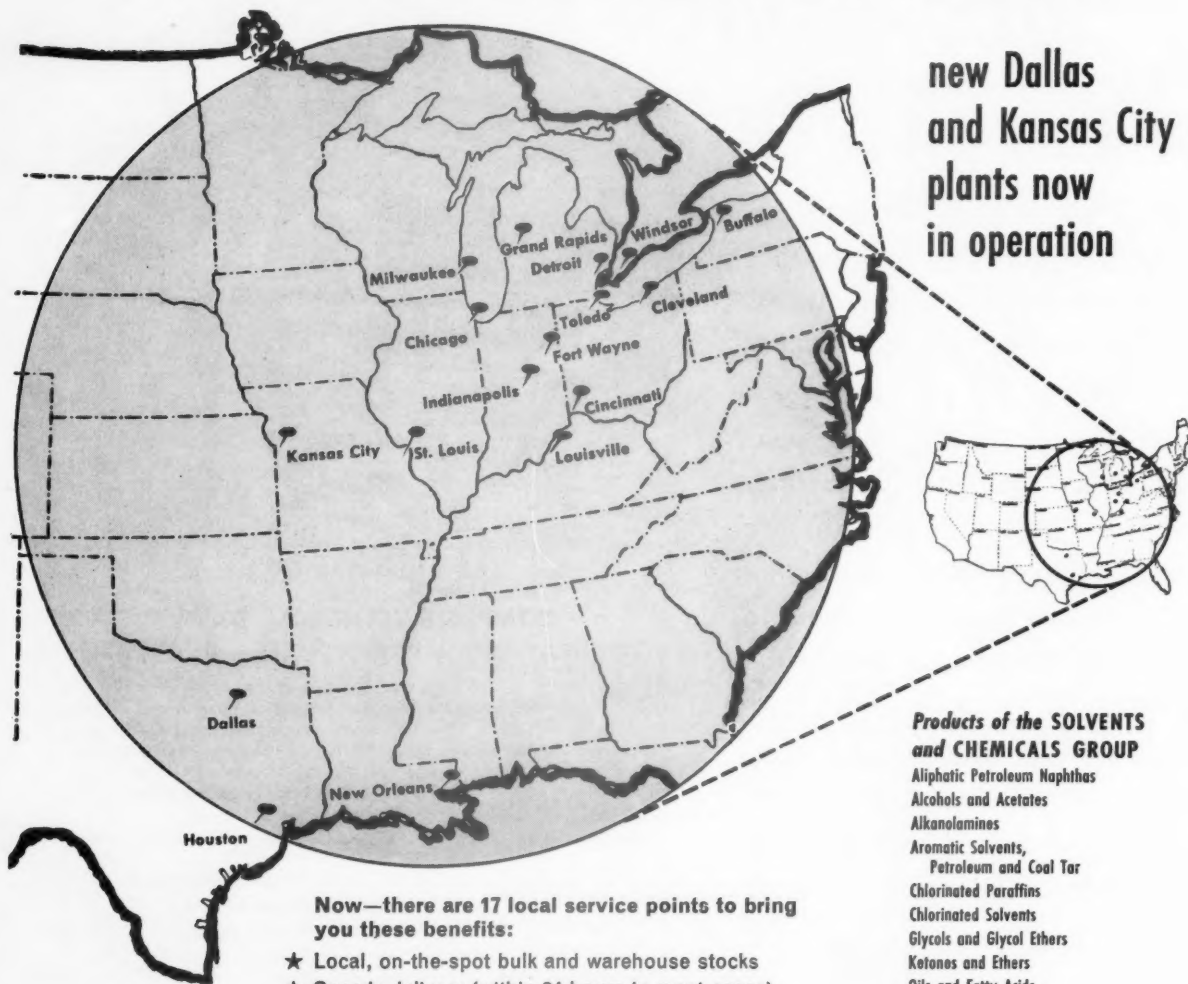
- VINYL CHLORIDE-ACETATE RESINS • VINYL ACETATE RESINS
- VINYL CHLORIDE RESIN
- VINYL ALCOHOL-ACETATE RESIN SOLUTIONS
- VINYL ACETATE RESIN LATEX
- VINYL BUTYRAL RESINS • POLYETHYLENE RESINS
- 100% PHENOLIC-NON-HEAT HARDENING
- 100% PHENOLIC-HEAT HARDENING
- DISPERSIONS
- PHENOLIC "RESIN BAKING" RESINS AND SOLUTIONS
- POLYSTYRENE EMULSIONS
- EPOXY RESINS

HELPFUL FREE LITERATURE FOR YOU AND YOUR CUSTOMERS

In addition to data sheets and manuals there are booklets that can give you market ideas, and show your customers how coatings based on BAKELITE Resins protect structures and equipment in practically every industry. For information and literature write to Dept. HO-153.



now—17 points of local service for solvents and chemicals



new Dallas
and Kansas City
plants now
in operation

Now—there are 17 local service points to bring you these benefits:

- ★ Local, on-the-spot bulk and warehouse stocks
- ★ Speedy delivery (within 24 hours in most cases)
- ★ Local sales forces provide personal attention
- ★ Fast, accurate technical information
- ★ Quality-controlled materials of leading producers
- ★ Broad line of products to meet your needs (in drums, tank wagons, transports and tank cars)

Products of the SOLVENTS and CHEMICALS GROUP

Aliphatic Petroleum Naphthas
Alcohols and Acetates
Alkanolamines
Aromatic Solvents,
Petroleum and Coal Tar
Chlorinated Paraffins
Chlorinated Solvents
Glycols and Glycol Ethers
Ketones and Ethers
Oils and Fatty Acids
Plasticizers
Resinates—Sodium and Potassium
Rosins—Gum and Wood
Stearates
Terpene Solvents
Waxes

Amso Solvents & Chemicals Co.
4619 Reading Road—Elmhurst 1-4700
Cincinnati 29, Ohio

Buffalo Solvents & Chemicals Corp.
Box 73, Station B—Bedford 1572
Buffalo 7, New York

Central Solvents & Chemicals Co.
2540 West Flourney Street—SEeley 3-0505
Chicago 12, Illinois

Dixie Solvents & Chemicals Co.
Dixie Highway at Appleton Lane—Atwood 5828
Louisville 16, Kentucky

Hosier Solvents & Chemicals Corp.
1650 Luett Ave.—MElrose 8-1361
Indianapolis 22, Ind.
Nelson Road East—Anthony 0213
Fort Wayne 8, Ind.

Missouri Solvents & Chemicals Co.
419 De Soto Ave.—GARfield 1-3495
St. Louis 7, Missouri
2522 Nicholson Ave.—Chestnut 3223
Kansas City, Missouri

Ohio Solvents & Chemicals Co.
3470 W. 140th St.—CLEARwater 2-1100
Cleveland 11, Ohio

Southern Solvents & Chemicals Corp.
1354 Jefferson Highway, P. O. Box 4067
Carrollton Station—Temple 4666
New Orleans 18, Louisiana

Texas Solvents & Chemicals Co.
8501 Market Street—Orchard 6683
Houston 15, Texas
2500 Vinson Street—FEderal 5428
Dallas 12, Texas

Western Solvents & Chemicals Co.
6472 Selkirk Ave.—WAlnut 1-6350
Detroit 11, Mich.
Central Ave. at Reynolds Road—Jorden 0761
Toledo 8, Ohio

Western Solvents & Chemicals Co. (Canada) Ltd.
1454 Crawford St.—CLEARwater 2-0933
Windsor, Ontario

Wisconsin Solvents & Chemicals Corp.
1719 South 83rd St.—GREENfield 6-2630
Milwaukee 14, Wisconsin

Wolverine Solvents & Chemicals Co.
1500 Century Ave., S. W.—CHerry 5-9111
Grand Rapids 9, Michigan



THE SOLVENTS AND CHEMICALS GROUP

2540 West Flourney Street • Chicago 12, Illinois

NEWS

ASTM Elects Officers; D-1 Recommendations

With a near-record registered attendance of 2537 the American Society for Testing Materials brought to a close its 58th Annual Meeting at Atlantic City, N. J., on July 1.

At the week-long meeting the Society held 32 Technical Sessions and approximately 700 technical committee meetings. Sixty-six technical committees presented reports. Sixty-seven new specifications and methods of test were approved as tentative, and revisions in 351 existing tentatives and standards were acted upon.

The following officers were elected:

Claire H. Fellows, Director, Engineering Laboratory and Research Dept., Detroit Edison Co., Detroit—President for a one-year term.

Richard T. Kropf, Vice-President and Director of Research for the Belding Heminway Co., Inc., New York—Vice-President for a two-year term.

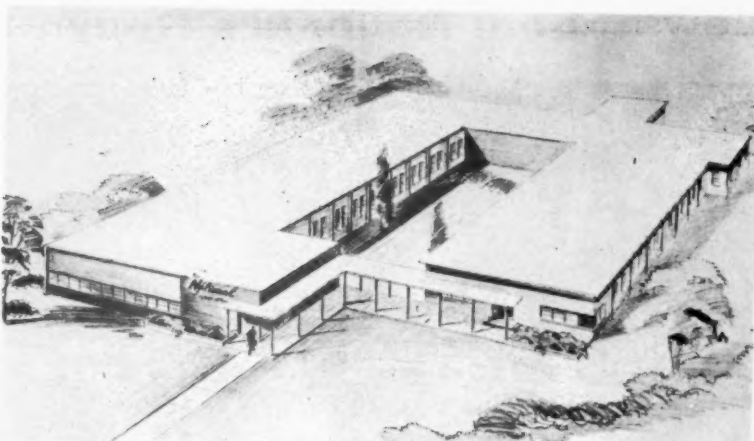
Directors of the Society elected for three-year terms are:

R. C. Alden, Chairman, Research Planning Board, Phillips Petroleum Co., Bartlesville, Okla.; A. A. Bates, Vice-President, Research and Development, Portland Cement Assn., Chicago; F. L. LaQue, Vice-President and Manager, Development and Research Div., The International Nickel Co., Inc., New York; E. F. Lundeen, Assistant Superintendent, Quality Control Dept., Inland Steel Co., Chicago; and J. C. Moore, Director, Technical Section, National Paint, Varnish and Lacquer Assn., Inc., Washington, D. C.

Committee D-1 Report

The Committee and 76 of its subcommittees and working groups held meetings over a three-day period. A highlight was an illustrated paper on, "The Importance of Test Methods for Controlling the Quality of Paints Used by the

(Turn to page 70)



Architect's drawing of the addition to the present Alexander Research Laboratories in Plainfield, N.J. National Starch Products Inc. plans to centralize its research, development and technical staff in this modern center.

To WOOD or METAL lacquers
Zinflex
adds these important qualities

WOOD

- lighter, clearer, deeper finish
- better adhesion, elasticity, mar resistance
- high oil and naphtha resistance
- high solids content at working body
- no checking or "alligatoring"

METAL

- greater adhesion to brass aluminum, tin plate and steel
- better build
- improved flexibility
- greater hardness
- PLUS all the benefits Zinflex gives to wood lacquers

Zinflex the modified shellac lacquer additive, makes your fine lacquers better because—

1. It's modified for greater compatibility with hydrocarbon solvents
2. You can use more of it in your lacquer formulations.

Write today for technical data, suggested formulations, and a generous test sample. Zinflex is a product of William Zinsser & Co., producers of only the finest shellacs since 1849.

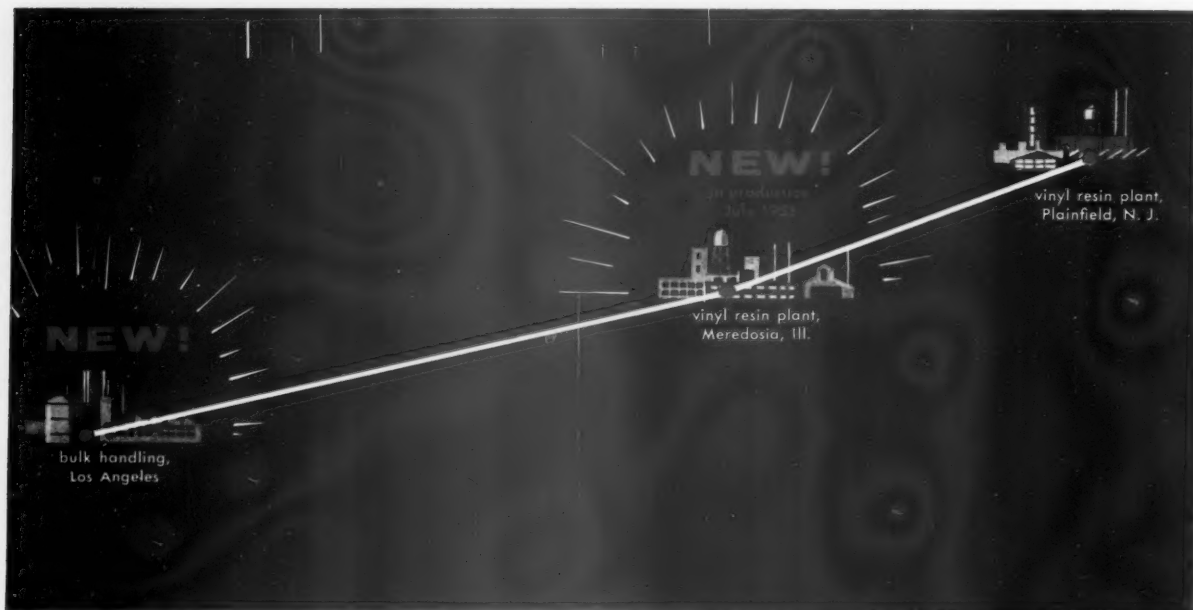
WILLIAM ZINSSER & CO.

offices and factories at

516 W. 59th St.
New York 19, N. Y.

319-323 N. Western Ave.
Chicago 12, Ill.

News about National's Resyn 12K-51 for paints



STILL MORE!...FASTER!

— for the third time in three years.

National again expands facilities for Resyn 12K-51, its inherently flexible PVAc copolymer emulsion.

This time it's two new installations:

- 1 — a second vinyls plant at Meredosia, Illinois.
- 2 — bulk handling at Los Angeles.

— in addition to our increased capacity at Plainfield, N. J.

This means still more Resyn 12K-51. And it reflects our growth in a fast expanding vinyl paint market that has a potential volume of 30,000,000 gallons.

Too, deliveries will be faster. From Meredosia, Los Angeles or Plainfield. With all customers enjoying the equivalent of two sources of supply.

If you haven't evaluated the pigment binding power, film toughness and other unusual advantages of Resyn 12K-51, get in touch with your nearest National office.

Our vinyl paint chemists will be happy to supply the details.

RESIN DIVISION

National
STARCH PRODUCTS INC.

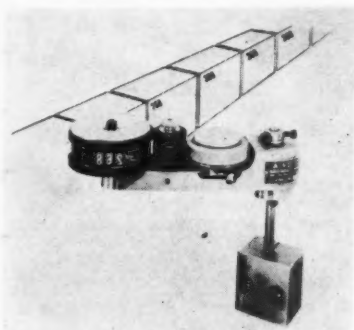
Plainfield, N. J., 1700 W. Front Street, PL 6-4567 or LE 2-0060 in N. Y. • Chicago 32, 3641 So. Washtenaw Ave., LA 3-6333 • Los Angeles, 1238 So. Atlantic Blvd., AN 9-0378 • San Francisco, 735 Battery Street, GA 1-0200 • Cleveland, 3540 Croton Ave., S. E., UT 1-1566 • In Canada: Toronto, 371 Wallace Avenue, Melrose 2463 • Montreal: P. O. Box 50 N.D.G., Melrose 7-6733 • Mexico City: Polimeros, S. A., Apartado 28504, Mexico 17, D. F.



NEW MATERIALS & EQUIPMENT NEW

A MONTHLY MARKET SURVEY

This section is intended to keep our readers informed of new materials and equipment. While every effort is made to include only reputable products, their presence here does not constitute an official endorsement.



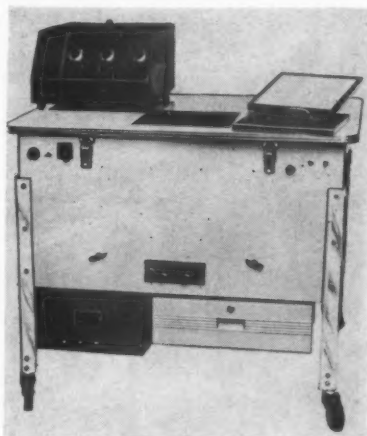
KRENGLE

MARKING MACHINE Automatic

Company's rotary coder, engineered of heavy gauge steel for high-speed precision operation, automatically prints names, dates, codes, or other identification. Powered by a friction roller attachment, the unit imprints on boxes, cartons, packages, cases, any kind of surface. Its self-inking feature is said to assure clear, clean sharp impressions every time. Coder is completely automatic with the exception that someone has to affix the rubber type or die that will reproduce the imprint wanted. Kregel Manufacturing Co., Inc., 227 Fulton St., New York 7, N. Y.

ORGANIC STABILIZER Imparts Heat and Light Properties

"Advastab XE-82" is said to act as a very effective scavenger for HCl and, as such, be a very powerful auxiliary stabilizer for vinyls, chlorinated paraffin and chlorinated rubber. Its compatibility with them is said to be perfect. Advance Solvents & Chemical Corp., 245 Fifth Ave., New York 16, N. Y.



GARDNER

COLOR DIFFERENCE METER Automatic

This large-area Colorimeter is said to fulfill special instrumentation requirements that are involved in the measurement of oversize color of non-uniform samples. It is essential, with this type sample, that a large area be presented. The design of the instrument is based upon the Gardner Color and Color-Difference Meter, the major alterations being the much greater size of the specimen exposure head, and the use of ultraviolet type lamps (black light) as a means of determining the effect of "optical brighteners" in dyed material. Gardner Laboratory, Inc., Bethesda 14, Md.

SILICA High Oil Adsorption

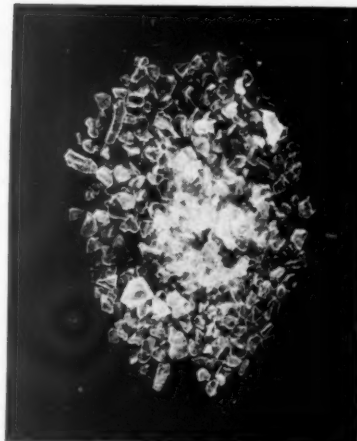
"Dustex Nicro-Silica," is said to be a soft, amorphous type silica which should be of special interest to paint and varnish producers. It has a particle range of 1 to 15 microns (98% minus 10 microns).

According to the company, product has a low pH value and higher oil absorption, in addition to the increased surface area. Tamms Industries, Inc., 228 N. LaSalle St., Chicago 1, Ill.

SILICONE RESINS

Wide Solvency and Compatibility

For those who wish to formulate their own silicone resin-based protective coatings, company offers two different, 100% silicone resins. Identified as "Dow Corning R-5061" and "R-5071," they both are available in the form of crumbled solids which are said to be soluble in a wide range of solvents and compatible with many heat-stable fillers and pigments. Both are well suited to the preparation of silk screen enamels or other specialized coatings, according to the company.

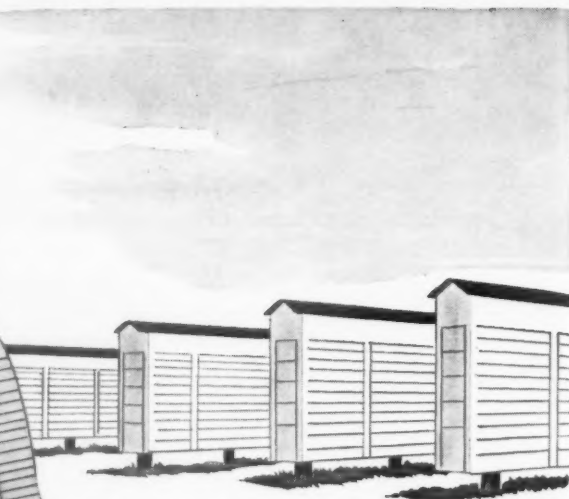


DOW CORNING

Films based on "R-5061" are said to form a tough film with good color retention, while films based on "R-5071" are somewhat less flexible and more thermosetting. Intermediate physical properties may be obtained by blending the resins in any desired proportions. Dow Corning Corp., Midland, Mich.

PILOT FILTER For Research

A pilot filter called "Pronto-Junior" is used for research and for the determination of filtration characteristics needed for production filter selection. It is a portable



Every day for 36 years the records have been taken at National Lead's Experimental Test Station, Sayville, L. I. . . the weather, hour-by-hour . . . solar radiation . . . the chemistry of the air . . . the condition of thousands on thousands of paint samples. Today, on 2½ miles of test fence, more than 30,000 exposure tests are active.

FOOLPROOF

your exterior paints

with Dutch Boy® "45X"

(Basic Silicate White Lead)

Want an extra leeway of safety against complaints? . . . "Use lead," say makers of exterior paints.

But thousands of exposure panels at Sayville, National Lead's Experimental Station go one step further. They prove you need lead for uniform performance. Prove, too, that "Dutch Boy" Basic Silicate White Lead "45X" assures uniform performance . . . makes exterior paints virtually foolproof, able to handle wide variations in application and service conditions.

In white House Paints, for instance, "45X" insures good self-cleaning. Preserves film integrity, as well.

In tinted House Paints, Dutch Boy "45X" increases film durability and maintains color uniformity.

In Primers, "45X" strengthens adhesion . . . helps keep the bond strong by resisting water.

Paint after paint, it's the same story . . . uniform performance . . . fewer complaints. With "45X," the time and cost of answering complaints goes down. Talk against your paints . . . talk you may not hear . . . fades away. Good will, repeat business comes your way.

Cost is lower, too

You actually need fewer pounds of "45X." For in "45X" the reactive portion of each pigment particle is concentrated at the surface. Pound for pound, more lead is available than in other white leads.

No question about it. If you want to cut complaints, step up quality and save money, "Dutch Boy" Basic Silicate White Lead "45X" is the lead to use in exterior paints.



National Lead Company: New York 6; Atlanta; Buffalo 3; Chicago 80; Cincinnati 3; Cleveland 13; Dallas 2; Philadelphia 25; Pittsburgh 12; St. Louis 1; San Francisco 10; Boston 6 (National Lead Co. of Mass.). In Canada: Canadian Titanium Pigments Ltd., 630 Dorchester St., W., Montreal.



**NEW
MATERIALS — EQUIPMENT**



AMERICAN PLANT

fully enclosed miniature pressure unit.

Product is designed to obtain the specific filtering rates of liquids in gallons per minute per square foot, the variation of flow rate as a function of the differential filtering pressure and the throughput. Filter cake density and cake washing efficiency can be determined also. American Plant Equipment Co., Manufacturing Div., 701 Spring St., Elizabeth 4, N. J.

COLOR DISPERSIONS

Complete Line

A line of ultra-fine color pigment dispersions in paste form is known as the "0100" series.

Company says that because of the extreme fineness of dispersion, the use of these pastes will result in a considerable saving of equipment time as well as elimination of a large part of off-color scrap. Once the compound formula is set up to give the correct color on the calendar or extruder, company color control will assure that subsequent batches, if made the same way, will produce the identical color. This will be true whether the next batch is made the same day or months later. Also, since these pastes are stabilized against agglomeration, streaks and tails should be eliminated, according to the company.

Acheson Dispersed Pigments Co., 2250 E. Ontario St., Philadelphia 34, Pa.

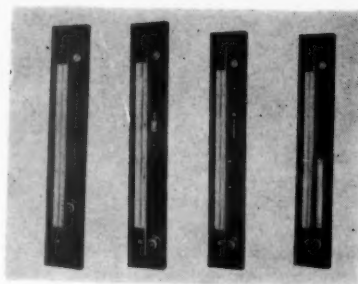
LIQUID INDICATOR

Remote Reading

The "Series 1400" petrometer remote reading liquid depth gauges, available in four models, are designed for convenient, rapid installation; easy, trouble-free operation, and accurate indication.

They are said to be ideal for measuring depth and quantity of liquids in storage tanks and process vessels in paint and other industries. They can be installed on tanks up to 50 feet deep, located above or below the ground and up to ¼ mile away.

The series operates on the principle of hydrostatic pressure. The pressure exerted by the weight of the liquid in the tank is trans-



LIQUIDDEPTH

mitted pneumatically through a copper tube transmission line to the liquid column in the indicator.

Manufacturer says design features of the gauges include: Self-contained instrument panel. No functional parts on the mounting

Chats about Finishes

**EMULSION PAINTS
POSE NEW PROBLEMS**

by A. R. OLSEN
Sales Manager,
Virginia Cellulose Department



Growing markets for emulsion paints pose many new production problems. Unlike oil-based paints, emulsion formulations contain many different ingredients, often in minor proportions, all of which are added to improve certain storage, application, and film properties of the coatings.

Emulsion paint formulators are finding many of the answers to their problems in Hercules® CMC (sodium carboxymethylcellulose), one of the most versatile and useful of water-soluble gums. Used in emulsion paints, CMC provides such advantages as excellent stability, simplified viscosity control, ease of solution, increased wet-edge time and improved pigment-grinding efficiency.

Widely used in polyvinyl acetate and acrylate systems, CMC can also be combined to advantage with solubilized protein in butadiene-styrene copolymer type paints. In all three applications it has proved an excellent thickening and stabilizing agent.

A. R. Olsen

Virginia Cellulose Department
HERCULES POWDER COMPANY

926 Market St., Wilmington 99, Del.



American Zinc inc and its products from A to Z

HERE'S WHERE YOUR AMERICAN ZINC COMES FROM

MINES
METALINE FALLS
WASHINGTON

PLANT
ZINC CARBONATE, CADMIUM,
GERMANIUM & SULPHURIC ACID
EAST ST. LOUIS
ILLINOIS

MINES
PLATTEVILLE
WISCONSIN

PLANT
ZINC OXIDE
HILLSBORO
ILLINOIS

PLANT
ZINC SMELTER
HILLSBORO
ILLINOIS

PLANT
ZINC SMELTER
DUMAS, TEXAS

MINES
PICHER
OKLAHOMA

PLANT
ZINC SMELTER & SPECIALTY PLANT
MONSANTO, ILLINOIS

MINE
MASCOT
TENNESSEE

PLANT
ZINC OXIDE
COLUMBUS, OHIO

MINES
JEFFERSON COUNTY
TENNESSEE

3 QUARRIES
CRUSHED STONE
E. TENNESSEE

PRODUCERS OF

ALL GRADES OF SLAB ZINC
ZINC ANODES (Plating & Galvanic)
METALLIC CADMIUM
SULPHURIC ACID
LEAD-FREE and LEADED ZINC OXIDES
ZINC CARBONATE
GERMANIUM DIOXIDE
AGRICULTURAL LIMESTONE
CRUSHED STONE

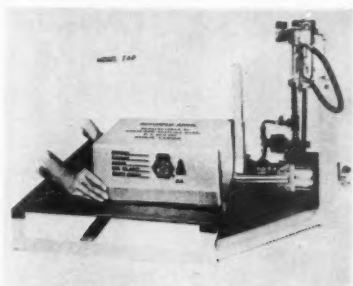
Distributors for

American Zinc sales Company

AMERICAN ZINC, LEAD & SMELTING COMPANY
Columbus, Ohio • Chicago • St. Louis • New York • Detroit • Pittsburgh

NEW MATERIALS—EQUIPMENT

plate or as separate units; indicating liquid is "sealed-in" to prevent spillage in transit and to eliminate cumbersome filling through small openings; one-piece extruded aluminum indicating unit with separate channels for the scale and protective plastic window; and self-aligning quick-lock fasteners and receptacles to simplify mounting of the panel to the mounting plate. Liquidepth Indicators, Inc., 43-22 Tenth St., Long Island City 1, N. Y.



CONTAINER

AUTOMATIC TRIP For Stapling Operations

"Model Tap" is an automatic trip controlled without a solenoid. Unit clenches the staple and retracts when the carton is tapped against the stapling head. Machine has no foot switch, mechanical cable or relay. It is said to be the first and only retractile anvil machine ever produced that staples automatically by completely mechanical means. Container Stapling Corp., 308 N. Park Ave., 308 N. Park Ave., P.O. Box 247, Herrin, Ill.

MONOMERIC PLASTICIZER Lacquers And Plastisols

"Hercolflex 600" is a monomeric plasticizer from the company's pentaerythritol. Volatility of the plasticizer used is said to have a pronounced effect on the durability of nitrocellulose lacquers. Lacquer coating presents a very high surface-to-volume ratio, an ideal situation for evaporation of plasticizer.

When product is used as the sole plasticizer in vinyl plastisols the plastisols are said to have a relatively low viscosity and good vis-

cosity stability. This characteristic of product is said to permit either the production of harder, tougher end products or the use of more filler in the compositions. Synthetics Dept., Hercules Powder Co., Wilmington 99, Del.

ANTI-FOAM AGENT Silicone Type

"Anti-Foam 60," a low-viscosity silicone emulsion, has been designed specifically for use in aqueous foaming systems. It is claimed to represent a significant advance over conventional silicone defoamers, due to its ease and versatility of application in a broad cross section of industries plagued with foaming problems.

Product is said to pour readily and disperse instantly, even in cold water. It can be added directly to the foaming system or can be diluted with water to any desired concentration. Little or no stirring is said to be required.

Manufacturer says product will permit a 30 to 50 per cent increase in the capacity of stills, kettles and other equipment, and will help reduce processing time, since it permits continuous heating during distillations. It can also minimize fire hazards by suppressing flammable foams, according to company. Silicone Products Dept., General Electric Co., Waterford, N. Y.



3 reasons why Reichard-Coulston IROX red oxides make rich enamel and paint shades

(1) High bulk, (2) fine particle size, (3) bright colors—these qualities of REICHARD-COULSTON IROX Red Oxides make for rich enamel and paint shades.

Manufacturers prefer IROX Red Oxides for other reasons, too . . . Among them: IROX Reds' tinting strength and clean tints are cost-cutters for shading needs. And REICHARD-COULSTON IROX Reds'

shades range from light red to maroon.

These are just a few of the reasons why REICHARD-COULSTON IROX Reds and other iron oxides are so widely used. Learn what REICHARD-COULSTON reds, yellows, umbers, siennas, and metallic browns can do for your production. For free laboratory samples and technical data, write today.



Reichard-Coulston, Inc.
15 EAST 26th STREET, NEW YORK 10, N. Y.

THESE COMPANION PAINT MILLS CAN DO THINGS TO YOUR COSTS

No plant is too large or too small for the high production economy pair—the 631-V Vertical and the 662-V Horizontal Three Roll Paint Mills. Together they reduce paint milling costs to a point that no other combination of mills has reached.

Both of these mills are equipped with Sight-O-Matic* Control, making roll adjustments simpler, faster, and more accurate.

Lehmann is glad to offer you milling research service on your paint formulations, without obligation. Just send us samples, state your problem, and we will undertake to find the answer.



Lehmann Model 662-V (also 661-V and 663-V) Three Roll Sight-O-Matic Paint Mill. Also available with selective Float-O-Matic feature.



Lehmann Model 631-V (and 632-V) Sight-O-Matic Three Roll Paint Mill.

Do any of your mills need factory re-conditioning? Lehmann has cut mill out-of-service time by at least one-half by the recent addition of many modern machine tools and new techniques. Phone or write for details.

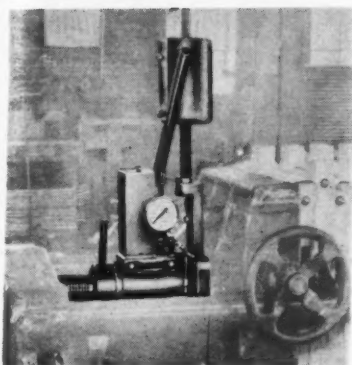
*Reg. U. S. Pat. Off.



J. M. LEHMANN COMPANY, Inc.

MAIN OFFICE AND FACTORY: 558 NEW YORK AVE., LYNDBURST, N. J.

NEW MATERIALS — EQUIPMENT



SPERRY

CLOSING DEVICE

For Filter

The "Handraulic" closing device is said to be of such design that it requires no additional support or foundation and therefore can be added to existing filter presses in the field, without alterations, re-boring, or removal of any plates.

The unit replaces the filler block and is locked in position with the slide head by the cap screw provided. Weight and rod are assembled to the filler square. The original manual closing device remains in position as a stand-by unit. It is also available as original equipment on new Sperry Filter Presses. D. R. Sperry & Co., Batavia, Ill.

ALKYD RESIN

Low Odor

"G-E 7332" glyptal alkyd Resin has been especially designed for flat and semi-gloss wall enamels, primers, trim and industrial finishes. It is said to be compatible with raw, heat-bodied, blown or linseed oils and medium or long alkyd resins when it is the major component of the mixture.

Manufacturer claims product has low odor; outstanding penetration resistance; excellent mar resistance; excellent recoatability; freedom from lap marks; excellent brushability; dries overnight; good weather, oil, gasoline and water resistance; and good scrubability. General Electric, Chemical Materials Dept., Chemical and Metallurgical Div., One River Rd., Schenectady, N. Y.

EMULSIFIER AND SOLUBILIZER For Latex And Alkyd Systems

Two products specially produced for the paint industry are "Witco DGO," a diethylene glycol oleate (diglycololeate) for emulsifying latex and resin emulsion paint systems, and "Witco GMO," a glycerol mono oleate of the non-self-emulsifying type for dispersing or "solubilizing" alkyd resins in "odorless" paint systems.

"Witco DGO" is called a self emulsifier. "Witco GMO," a dispersant, may also be used as a solubility aid in paint formulations and as a viscosity modifier, ac-

cording to the company. Witco Chemical Co., 122 E. 42 St., New York 17, N. Y.

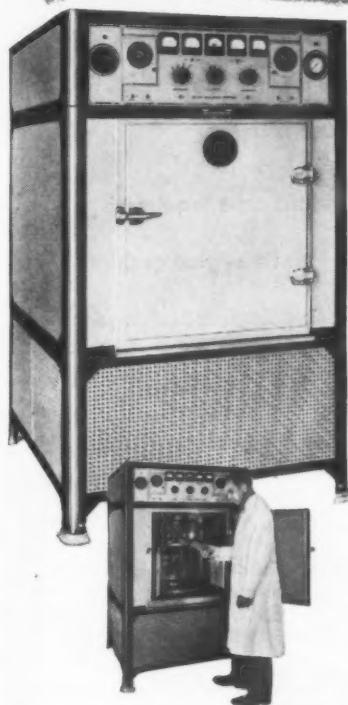
SYNTHETIC WAX For Alkyd Flats

"Acrawax C" powdered, a flattening agent for aliphatic alkyd paints, is a high melting point synthetic wax. Manufacturer says it is a fairly hard moisture resistant wax which gives additional advantages by acting as a slip agent and by improving wear and moisture resistance. Its incorporation is said to increase the viscosity and improve the brushability of paint. Glyco Products Co., Inc., Empire State Building, New York 1, N.Y.

A NEW Weather-Ometer

... for Weather Testing Paint Products

MODEL DMC



**Greater accuracy and
reproducibility
achieved with new
modulated temperature
control**

Accuracy in test results is greatly increased in the new DMC Weather-Ometer by a positive control of specimen temperatures.

A constant volume of air at a controlled temperature in the heavily insulated cabinet, maintains uniform predetermined specimen temperatures regardless of variations in room conditions.

Automatic control of humidities up to dew point is available as optional equipment.

All automatic controls including complete voltage controls are located on the front panel of the Weather-Ometer directly above the door of the test chamber.

Both horizontal and vertical testing is available. Shallow containers are used for semi-liquid materials and vertical panels for solid materials.

Source of radiation is two Atlas enclosed violet carbon arcs.

Complete technical information on the DMC model and other Weather-Ometers is contained in the new Weather-Ometer catalog. A copy will be mailed on request.

ATLAS ELECTRIC DEVICES CO. • 4114 N. Ravenswood Ave., Chicago



PERSONNEL CHANGES

GEORGIA MARBLE

William B. Tate, Jr. has been appointed Sales Manager of the Calcium Products Division. He has had wide experience in all fields where crushed and ground limestone is used.

Ashton E. Garner, formerly Sales Manager of this division, has resigned to enter his own business. He will continue to represent the division in the sale of certain of its products in the State of Florida.

ALLIED CHEMICAL & DYE

Carlton Bates has been appointed President of the Solvay Process Division. He has been Executive Vice President of the division since 1952. He succeeds **A. B. Chadwick**, who is retiring after 44 years of service.

Mr. Bates has been with Solvay since 1916, when he started in the Syracuse plant laboratory as a chemist. In 1920 he became Assistant Manager of caustic soda and bicarbonate of soda operations.

From 1922 to 1934 Mr. Bates was successively Manager of the bicarbonate of soda plant, Supervisor of the soda ash section, and Assistant Manager of the Syracuse and Detroit plants.

He managed the Baton Rouge, La., plant for 11 years and in 1945 was made Director of Operations.

COLUMBIAN CARBON

Edwin B. Brooks, General Sales Manager, heads the new Pigment Division formed to take over the sales functions formerly handled for the company by Binney & Smith Inc. The change was announced by **Carl E. Kayser**, President.

Mr. Brooks comes to his new responsibilities after more than 18 years in the Binney & Smith organization. Lately he has been president of Binney & Smith International Inc. **Enos H. Baker**, formerly head of Binney & Smith's Akron office, becomes Mr. Brooks' assistant.



E. B. Brooks



R. Foster



C. O. Davidson

C. O. Davidson heads domestic sales, assisted by **John T. Kealy** in charge of iron oxide pigment sales, and **Randolph Foster** heading sales of carbon black and carbon dispersions to paint, ink, plastic, paper and other non-rubber consumers.

John W. Snyder will head technical service to carbon black consumers in the new sales organization; and **C. D. Downs** will handle technical service on iron oxides as heretofore.

Charles A. Polachi will supervise the international business as Vice President of Binney & Smith International Inc., that becomes a wholly owned Columbian subsidiary.

POLYMER INDUSTRIES

Dominick Toscano has been appointed to the Springdale, Conn. production staff. He was formerly associated with the Lacquer Division of Atlas Powder Co.

INERTOL

Kenneth L. Sklar has been appointed Manager of Sales-Service, it was announced by **G. W. Rupp**, President of the paint manufacturing company.

He joined the firm in 1951 as Manager of the Sales Correspondence Department. He had previously been on the sales staff of Hearn's Department Store in Newark, N. J.

SYLOID® 162

Davison's NEW Alkyd-Urea Flatting Agent, for Synthetic Finishes, gives you

MORE FLATTING POWER AT LOWER COST

Laboratory tests and actual use tests have proven that **SYLOID 162**:

- can be ground in one-quarter the time required by other varnish flatting agents.
- the flatting power is two to three times greater than existing materials.
- twice as much can be ground in a single mill charge.
- the high and low tones are not destroyed as with present varnish flatting agents.
- films are tough, durable and mar resistant.
- has an exceptionally high chemical purity.
- chemical properties are controlled to insure uniform performance.
- there is no "seeding".

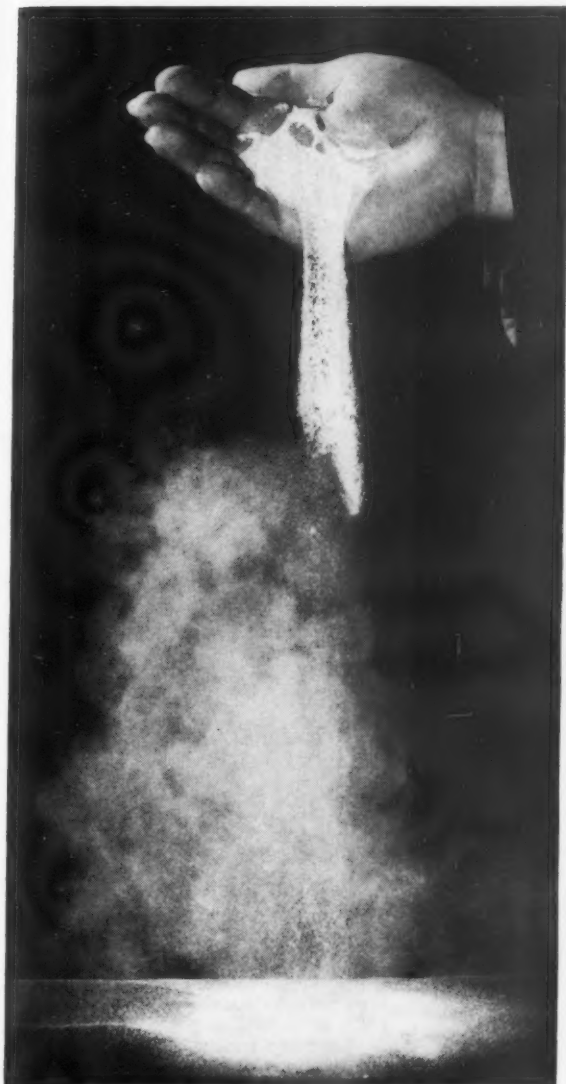
For further information on SYLOID 162—the alkyd-urea varnish flatting agent that gives you better performance at lower cost—write

Progress Through Chemistry

DAVISON CHEMICAL COMPANY

Division of W. R. Grace & Co.
BALTIMORE 3, MARYLAND

Producers of Catalysts, Inorganic Acids, Superphosphates, Triple Superphosphates, Phosphate Rock, Silica Gels and Silicofluorides. Sole Producers of DAVCO® Granulated Fertilizers.



THE OLD AND THE NEW—These unretouched photographs tell the story. At the left is regular "low-dusting" PE, at right, Hercules' new nondusting grade.

HERCULES HAS REMOVED THE "DUST" FROM PE



Hercules' new nondusting technical PE is now available in full commercial quantities—at no increase in cost!

This new grade of Hercules® technical pentaerythritol has a more uniform particle size. There is no change in its carefully balanced chemical specifications, but through entirely new mechanical processing methods all fines and "smoke" are eliminated.

The result is greater safety, better working conditions (especially during charging), and more uniform reactions because fewer fine

particles collect on the dome of the kettle and in the condensers.

Specify the new Hercules nondusting grade on your next PE order and see the difference for yourself. For further information, contact your nearest Hercules district sales office, or write:

Synthetics Department
HERCULES POWDER COMPANY
INCORPORATED
 926 Market Street, Wilmington 99, Del.

SPDS-1

DUTCH BOY GELLING AGENTS IN MODERN PAINT FORMULATIONS

Interior Paints Bodied with DUTCH BOY BENTONE® 34 Prove Superior For Color Uniformity

Users report unusual color uniformity in interior paints made with BENTONE 34. The gel, they say, stops soak-up of vehicle by plasters and woods. It also stops pigment separation and flooding. "Streaks," "shiners," and tonal differences are eliminated. Then, too, BENTONE 34 aids brushability and steps up other characteristics important in certain types of interiors.

Improves application in flats

In flats, BENTONE 34 prevents sag. In low solids flats, it also aids pigment suspension and overcomes low viscosities caused by removing low-hiding extenders.

Gives enamels good pigment suspension

A few pounds of BENTONE 34 effectively cushion settling particles of pigment and filler in enamels. BENTONE 34 promotes good thixotropic viscosity and stops sag, too.

Develops satin-like semi-glosses

BENTONE 34, in quantities over 4 lbs./100 gals., shows moderate flattening action. Thus it is being used to develop satin-like semi-glosses that don't hard cake in storage.



BENTONES "X" out two defects...

1. Stop "Sag" by providing thixotropic action.
2. Stop "Streaks" by controlling separation or flooding.

Aids Penetration Control in Latex Emulsion Paints

A new DUTCH BOY development, BEN-A-GEL®, does for color uniformity of latex emulsion paints what the BENTONES do for other paints. With this inorganic gellant, you can prevent excessive absorption of vehicle by porous surfaces.

IN LACQUERS BENTONE 18-C STOPS HARD SETTLING OF FLATTING PIGMENTS

In the high polarity solvent systems used for lacquers, BENTONE 18-C gels prevent hard pigment settling. To flats the BENTONE contributes suspension control and mild flattening. In spray-applied glosses, the thixotropic BENTONE gel aids in retarding cobwebbing.

Handbooks Develop Formulation Factors... Other Uses



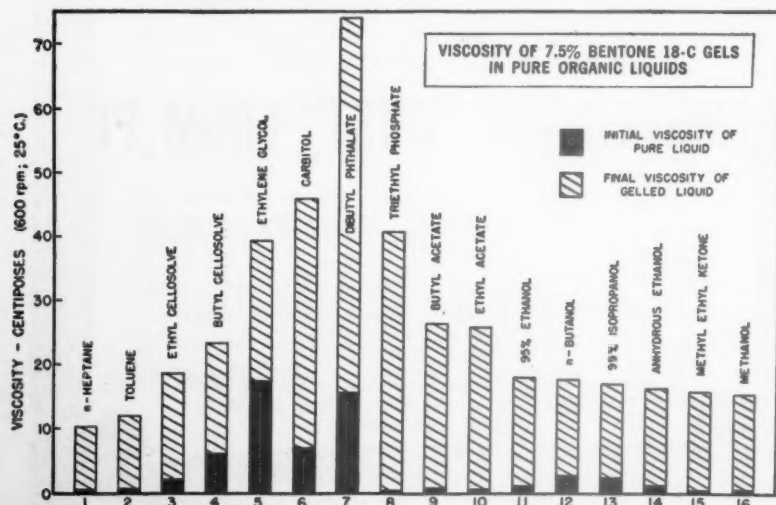
Detailed suggestions for incorporating the BENTONES are included in two DUTCH BOY handbooks covering BENTONES 18-C and 34. If you don't yet have copies, write. Ask for the brochure on DUTCH BOY BEN-A-GEL, too.

**Dutch Boy®
CHEMICALS**

NATIONAL LEAD COMPANY

111 Broadway, New York 6, N. Y.

In Canada: CANADIAN TITANIUM PIGMENTS LIMITED
630 Dorchester Street, West - Montreal



Typical Gel Strengths developed by BENTONE 18-C in pure organic liquids.

CROWN CORK & SEAL

George W. Crabtree, Vice President of the company and General Manager of the Can Division, has been elected Executive Vice President of the company, it was announced by Russell Gowans, President.



G. W. Crabtree

Mr. Crabtree joined the firm in 1952 as Vice President in Charge of Manufacturing of the subsidiary, Crown Can Co., Philadelphia. In January 1954, when the domestic subsidiaries were changed to operating divisions, he was named Vice President and General Manager. He was elected to the Board of Directors, June 1954.

GENERAL MILLS

Richard Kron has been promoted to the position of Technical Service Supervisor at the Chemoil Plant, Kankakee, Ill. He was formerly research chemist.



Richard Kron

In his new position, he will supervise all technical development and service problems related to the sales of the Chemical Division's products. These include fatty acids, fatty nitrogen products and polyamide resins.

GLIDDEN

W. G. Wickham has been appointed Assistant Director of Branches, it was announced by A. D. Duncan, Vice President and General Manager of the Paint Division.

Formerly manager of the Indianapolis Branch, he succeeds **R. H. Stephens**, recently advanced to the post of Trade Sales Manager for the Central Region.

Mr. Wickham will assist J. H. Lathe, Jr., Branch Operations Manager, in expediting the development of the company's branch sales organization across the country.

AMERICAN CYANAMID

William A. Durbin has been named Manager of the Public Relations Department.

Since March 1, 1950, he has been Director of Public Relations of Burroughs Corp. He is Secretary and a member of the Board of Directors of the Public Relations Society of America and a member of the Public Relations Seminar Committee.

NATIONAL GYPSUM

Wade W. Hildinger, General Sales Manager in Buffalo, N. Y., has been named Director of General Sales, and **Melvin F. Cerruti**, formerly Eastern Division Sales Manager, has been appointed General Sales Manager, it was announced by Melvin H. Baker, Chairman of the Board.

Mr. Hildinger transferred to Buffalo six years ago from Dallas, Texas, where he had served as General Line Salesman and later as District Manager. Since his transfer, he has been successively Director of Trade Relations, Assistant General Sales Manager, and General Sales Manager.

Mr. Cerruti joined the company in 1928. He had been with the Old Beaver Board Co. for two years prior to that.

NATIONAL LEAD

John G. Hall has been appointed Plant Manager of the MacIntyre Development in Tahawus, New York. This installation mines and mills ilmenite ore, which is processed further at the St. Louis and Sayreville, N. J., plants to yield titanium dioxide pigment for use in paints, plastics, and other products.

Charles R. Begor, Jr., and **Archibald J. McDonell** have been named Assistant Plant Managers. Mr. Hall succeeds **Paul W. Allen**, who resigned to direct the domestic mining operations of Cyprus Mining Co.

Mr. Hall joined the company in 1952 as Assistant Plant Manager at Tahawus. His prior experience was in mining operations.

Mr. Begor's association with the com-

NEW LAWS REQUIRE THE USE OF NON-TOXIC COLORS FREE FROM LEAD FOR CERTAIN USES

We have available *clean, bright, fade-resistant* solid colors and pastel shades and tints that are stable in the package. For interior or exterior use in oil or varnish type vehicles. Soft in texture, easy wetting and grinding, high tint power and non-flocculating.

Order a trial quantity of these ATLAS PIGMENTS now.

CHECK OUR

**A8069 Hansa
Yellow Toner "G"**

and

**A8716 Hansa
(Type) Orange Toner**

for

**Economy • Safety
Durability**



ESTABLISHED 1851
KOHNSTAMM & CO., Inc.

89 PARK PLACE, NEW YORK 7 • 11-13 E. ILLINOIS ST., CHICAGO 11
2632 E. 54 ST., HUNTINGTON PK., CALIF.

pany began in 1947, when he was employed as Assistant Superintendent of maintenance at MacIntyre. He was later Superintendent of maintenance and in 1950 became General Superintendent.

Mr. McDonell was employed at MacIntyre in 1952 as chief engineer. He has experience in metallurgical operations in this country and in South America.

PITTSBURGH PLATE GLASS

Edward R. Frank has been appointed Assistant General Manager of the Forbes Finishes Division, it was announced by Charles H. Reed, General Manager of the division. Also announced was the appointment of Frederick F. Rhue as Manager of sales service for the division.

Mr. Frank has been associated with

the paint and brush division since 1946.

Mr. Rhue joined the company in 1948 at the Springdale, Pa. factory, where he was appointed Trade Sales Manager in 1951. He has been associated with Forbes Finishes since 1953 as assistant to the manager. He succeeds John W. Morris, who has been assigned as sales representative for Forbes Finishes Division in Michigan.

R. H. Smith has been appointed Assistant Manager for the company's St. Louis, Mo. distributing branch, it was announced by D. C. Burnham, Vice President of the Merchandising Division. Prior to this appointment, he had been Paint Manager of the New Orleans, La. distributing branch since 1949.

BRADLEY PAINT

Arnold J. Tuckerman has been appointed Technical Director of the Ordnance and Industrial Metal Finishes Division. He comes to the company after 15 years at the Pitman Dunn Laboratories, Frankford Arsenal, Philadelphia, where he has been serving as chief of the Polymer Branch in



A. J. Tuckerman

charge of the Research and Development of organic coatings as used by government installations and private industrial plants.

In addition to having written Specification MIL-C-12011 (Ordnance) Finishing of Fire Control Instruments and RP-PD-72 for steel cartridge cases, he was instrumental in the preparation of Specification MIL-V-12276 Steel Cartridge Case Coating and MIL-B-12121 Strippable Spray Coating for the protection of vehicles while in storage. He is also the holder of two patents in connection with the plastic liner for recoilless cartridge cases.

KOPPERS

Dr. Walter C. Rueckel has been elected Vice President and General Manager of the Engineering and Construction Division. He was formerly Vice President of the Henry J. Kaiser Co., Oakland, Cal. The announcement was made by Fred C. Foy, President.

Dr. Rueckel is recognized as an outstanding authority on steel plant and chemical plant engineering and construction. He also has had extensive sales and plant operation experience.

In his new position he will direct all company engineering and construction activities in this country and abroad including work on coke plants, blast furnaces, open hearth furnaces, sintering plants, chemical plants, and other types of construction for the steel, chemical and allied industries.

REICHHOLD

Leo T. Fay has been promoted to Chicago District Sales Manager of the Surface Coatings Resin Division.

He replaces Oscar F. Johnson, who is entering semi-retirement but will continue to serve as an advisor on sales and distribution coordination and as a coach and counselor of sales trainees.

Mr. Fay had been a company sales representative in Chicago for over a decade. Mr. Johnson has been with the firm nearly 20 years.

Question: *Would she have bought the paint if she hadn't seen a beautiful color card?*

MATHERSON-SELIG
COLOR CARDS SELL PAINT

The brilliant, silent salesman who made this lady see her living room in a "terrific new green", deserves a pat on the back! In this case the "salesman" is a Matherson-Selig color card.

A "paint can" display may inspire interest . . . but beautiful color cards get action . . . they make the customer buy.

That's why it's wise to get competent color card help from Matherson-Selig Company. Equipped to provide exact chip duplicates of even your most subtle colors and textures . . . equipped to give you service which is remarkably fast and dependable . . . we will surprise you even further with color card prices easily within your reach.

Our services include design, illustration, printing, folding, chipping. We are even prepared to provide you with a wide variety of beautiful four color illustrations.

MATHERSON-SELIG CO.
COLOR CARDS
1815 North Central Park Avenue, Chicago 47, Illinois



UNIQUE INERTS THAT IMPROVE YOUR PRODUCTS

Picture of perfection in **LATEX** formulations



Edgar ASP 400

There are down-to-earth reasons why EDGAR ASP 400 is the most widely used inert in latex systems.

Chemically Stable—EDGAR ASP 400 is thoroughly compatible in latex formulations. Due to special, patented processing, trouble-making water-soluble ions have been removed. It is wholly compatible with the latex, and blends perfectly with other pigments.

Physically Ideal—Only the best of the plate-like crystals that you see above qualify for ASP 400. Close control over particle shape and size gives your products superior performance. ASP 400 is soft, non-abrasive.

Summing Up—ASP 400 will give you a superior line of latex paints, hence a competitive edge. Your advantages are spelled out in reduced dispersion time, easier formulation, lower costs, desirable flow, improved workability, smooth "ghost"-free finish—all at no risk of breaking down your latex systems.

Across-the-board—ASP 400 is just one of a large family of EDGAR aluminum silicates, one of which may be ideal for the paint system you have in mind.

For You—Full Data . . . Sample Drums. Just check your needs and mail the coupon. No obligation, of course.



EDGAR PRODUCTS from . . .



**MINERALS & CHEMICALS
CORPORATION OF AMERICA**

9 STATION PLACE, METUCHEN, NEW JERSEY

SERVING OVER 750 PAINT MANUFACTURERS FROM WAREHOUSE STOCKS IN 28 CITIES

MINERALS & CHEMICALS CORPORATION OF AMERICA
9 Station Place, Metuchen, N. J.

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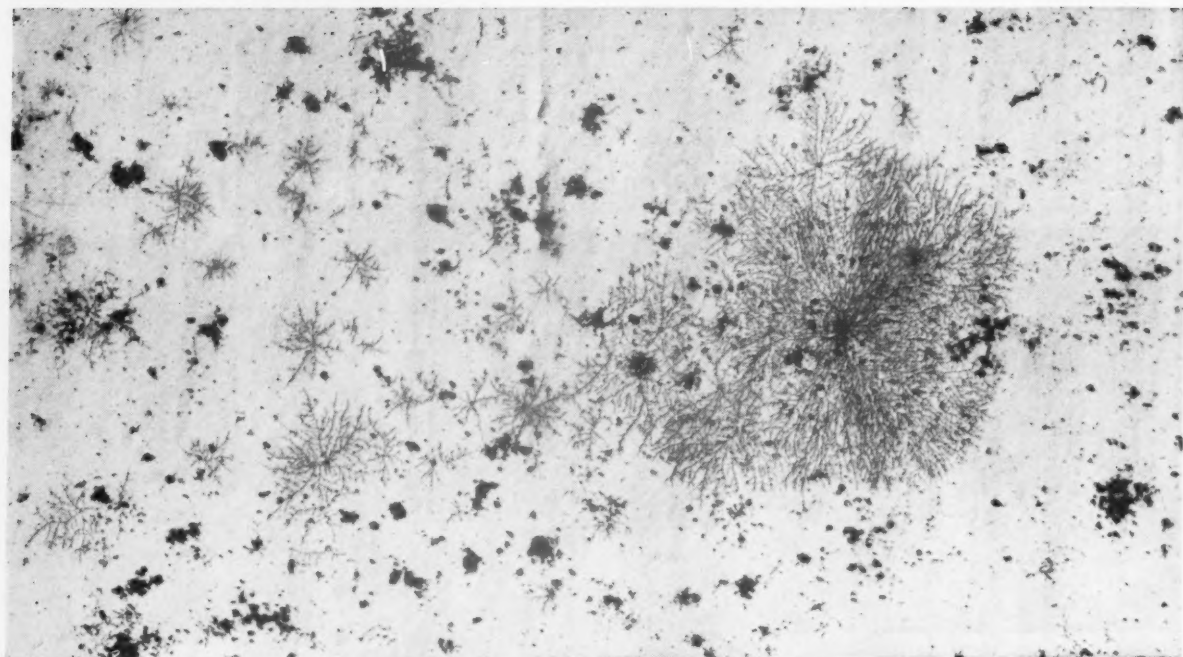
- ☐ Complete, up-to-date technical literature.
☐ Sample drum of ASP 400 ☐ 2 lb. ☐ 5 lb. ☐ 10 lb.
☐ Sample drum of ASP product(s) for _____
paint system.

name _____ title _____

company _____

address _____

city _____ zone _____ state _____



TEN DIAMETER PHOTOGRAPH OF MILDEW AT NEW ORLEANS TEST SITE

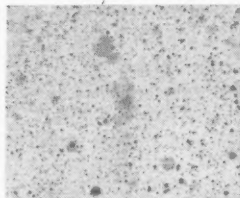
HAVING MILDEW PROBLEMS?

Then, formulate with
EAGLE-PICHER
Leaded Zinc Oxide

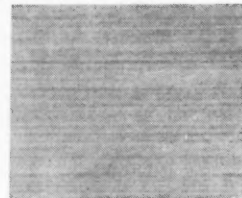
WITH EAGLE-PICHER LEADED ZINC OXIDE in your house paint formulation, you can provide improved resistance to mildew. Yes, scientific tests prove that house paints formulated with Eagle-Picher Leaded Zinc Oxide not only resist mildew discoloration but offer far superior decorative value and longer life at low cost.

HERE'S PROOF OF MILDEW RESISTANCE IN HOUSE PAINTS!

Tests made at Eagle-Picher Test Farm, New Orleans, La.



Mildew discoloration after 5 months vertical south exposure, without Eagle-Picher Leaded Zinc Oxide. (No fungicide used.)



No mildew after 5 months vertical south exposure, with paint* made from Eagle-Picher Leaded Zinc Oxide. (No fungicide used.)

* Formulation of Leaded Zinc Oxide Paint Used in Test

Pigment—62.2%		Vehicle—37.8%	
E-P #356 Leaded ZnO...	50.0%	Raw Linseed Oil.....	60.5%
TiO ₂ —Anatase.....	15.0	Z-3 Linseed Oil.....	19.5
Magnesium Silicate.....	35.0	Mineral Spirits.....	18.2
	100.0%	24% Pb.....	1.3
		6% Co.....	.5
		PVC—32.0%	100.0%



Since 1843

THE EAGLE-PICHER COMPANY

Largest Producer of Both Zinc and Lead Pigments

General Offices: Cincinnati 1, Ohio

Regional Sales Offices: Chicago, Cleveland, Dallas, New York, Philadelphia, Pittsburgh

GOODYEAR

C. O. McNeer, General Sales Manager of the Chemical Division, has announced the establishment of three new sales departments. They will be called Rubber and Rubber Chemicals, Plastics, and Coatings



R. S. Earhart



P. S. Sherman



M. J. Rhoad



A. E. Polson



John Warner

At the same time, two other key managerial moves also were announced. **R. S. Earhart**, Sales Operating and Marketing Manager, has been promoted to Assistant General Sales Manager, and **P. S. Sherman**, Assistant Operating Manager, has been named Sales Operating Manager.

Under the new set-up, **M. J. Rhoad**, Assistant to the General Sales Manager, becomes Manager of the Rubber and Rubber Chemicals department; **A. E. Polson**, Sales Service Manager, takes over as Manager of the Plastics Department; and **John Warner**, Manager of the division's St. Louis district, has been appointed Assistant Manager of the Coatings Department.

CHEMICAL MANUFACTURING

H. Percival Chase has been appointed Vice President with offices in Los Angeles, Calif., it was announced by Joseph Virdone, President.

Mr. Chase was formerly Vice President of Mefford Chemical Co.

NATIONAL ADHESIVES

B. V. Schaub and **Ernest Hofmann**, Vice Presidents of National Adhesives (Canada) Ltd. have jointly announced a new alignment of their technical service and sales groups.



G. Burgoyne



M. Stasko

Gerald W. Burgoyne, Assistant Sales Manager at Toronto since 1952, has been appointed Technical Service Manager with headquarters in Montreal.



M. Archambault



A. Bourke

Michael J. Stasko has been transferred from Toronto to Vancouver, as Technical Sales Representative for British Columbia and Alberta.

Marc Archambault will move from Montreal to Toronto as Technical Service Supervisor of that division.

Arthur Bourke, who has been responsible for developing many of the company's new products for the paper industry, has been named to the post of Technical Service Supervisor.

Step up SOLVENT POWER of nonflammable paint removers with **WITCO ALUMINUM OCTOATE**

Through its thickening action in chlorinated solvents, Witco Aluminum Octoate

- improves adherence of paint removers
- increases the effective time of their solvent action

These important improvements can be added to your paint remover formulation easily and at low cost. Write for complete technical data, or samples of Witco Aluminum Octoate for your evaluation.



35 Years
of Growth

WITCO CHEMICAL COMPANY

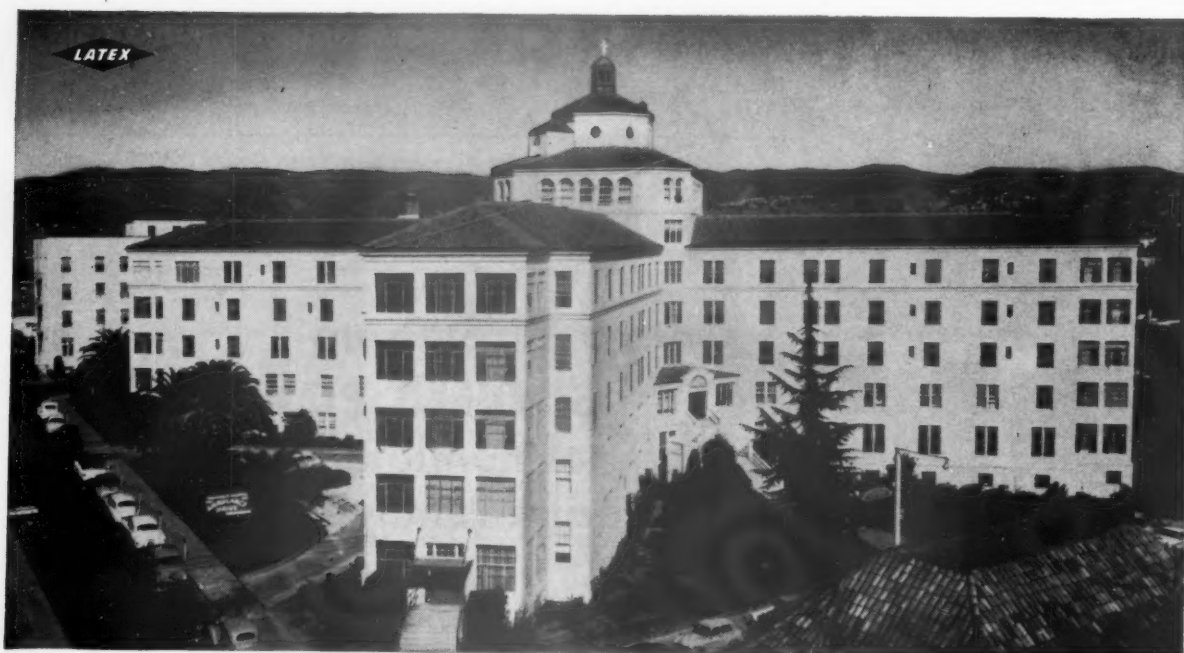
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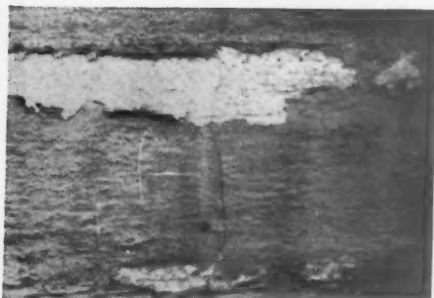


Exterior LATEX MASONRY PAINTS stay fresh and clean far longer . . . make repainting easy

Extensive tests prove Latex Paints are self-cleaning
 . . . chalk gradually to provide an ideal, repaintable surface



Providence Hospital, Oakland, California. Walter Blumert and Company, Painting Contractor



NO SUCH FAILURE FOR LATEX PAINTS!
 Surfaces protected with latex paint stay clean and fresh . . . without rust stains, ground stains, or water spots . . . and without blistering or peeling. They're ready for repainting with a minimum of preparation.

Whether you make or buy exterior masonry paints, it will pay you to get the facts on the *wearing* qualities of latex paints. Here are the modern paints that provide today's handsomest exteriors . . . and look ahead to the easiest repainting ever.

All paints fail in time . . . but the important difference is that latex paints stay fresh and clean far longer and chalk gradually to provide a repaintable surface with maximum adhesion, eliminating the need for extensive surface preparation. Test after test proves that Dow Latex 512K (STYRENE-BUTADIENE) makes durable masonry paints that won't mildew, yellow with time or retain dirt, and because they let the masonry breathe, they won't blister and peel.

These proved advantages, added to latex paint's fame for quick drying, lack of painty odor, ease of application, fast equipment clean-up, give latex paint every sales benefit. Write for the informative booklet, "Dow Latex 512-K for Exterior Latex Paints." THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Department PL 503E-1

you can depend on DOW PLASTICS



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HERCULES

Carl W. Eurenus, Director of Sales for the Cellulose Products Department since 1948, has been appointed Assistant General Manager of the department.

Werner C. Brown, Assistant Director of Sales, was named to succeed Mr. Eurenus as Director.

Both announcements were made by Elmer F. Hinner, General Manager of Cellulose Products Department.

Mr. Eurenus joined the Cellulose Products Department at Wilmington in 1942, and was named product Supervisor for chlorinated products in 1946. At the end of the same year, he was transferred to the sales research division as manager. Two years later he was transferred back to Cellulose Products Department as Director of sales.

Mr. Brown joined the company as a chemist at the Experiment Station near Wilmington in 1942, and served during World War II in various supervisory capacities at the Hercules-operated Government-owned Sun-flower Ordnance Works, Lawrence, Kan.

He was named an assistant group leader in 1947, Supervisor of the Cellulose Gum Division in 1949, and Assistant Director of sales in 1952.

L. Coleman Hall, Manager of the Hattiesburg, Miss. plant, will retire at the end of 1955, the company has announced. He joined the company in 1916.

Harry W. Watson, plant superintendent of the Brunswick Ga. plant, will succeed Mr. Hall as Manager at Hattiesburg.

Gordon E. Lowe, Assistant Plant Superintendent at Brunswick, will succeed Mr. Watson as Plant Superintendent at Brunswick. He joined the company in 1941 at the Kenvil, N. J., plant as a supervisor.

Barron B. Boyd, Area Supervisor at Brunswick, will succeed Mr. Lowe as Assistant Plant Superintendent at Brunswick. He joined the company in June, 1941, as a chemical engineer in the Pilot Plant Division.

Two new executive sales appointments in the Virginia Cellulose Department have been announced. They are: E. Langford Jones, Director of Sales and Charles A. Grant, Manager of chemical cotton sales.

AMERICAN MINERAL SPIRITS

J. A. Bartlett, Vice President of the company in New York, and a Director of American Mineral Spirits Co., Western, since its founding in 1947, was elected President of Western. He replaces M. A. Williams who has resigned.



J. A. Bartlett

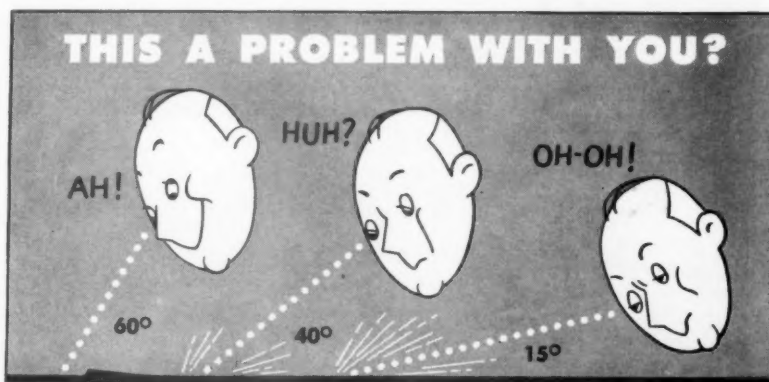
Mr. Bartlett will assume active duties as of September 1st, and will continue to retain his position as Vice President and Director of the company. A. J. Falkenberg and Ethan B. Higgins were elected Vice Presidents at the same time.

Mr. Bartlett has been with the com-

pany since January, 1934 when his father and Amsco entered the oil refining business in Miranda City, Texas. From 1934 to mid 1949 he served in various manufacturing and technical capacities in Amsco's refineries at Miranda City and Corpus Christi, Texas. He was elected a Vice President in 1945 and a Director in 1947. In June, 1949 he transferred to New York to take charge of supply, transportation, and distributing plants. He also has been active in sales.

GORMAN-RUPP

Ford D. Brown has been named eastern representative. He has had over fifteen years experience in the pump industry, having been associated with Bowser, Inc., Blackmer Pump Co. and Eco Engineering Co.



DICALITE Flatted paints are FLAT from all angles!

If you have the problem of flat paints being perfect at the "standard" 60° angle, but showing too high a sheen at lower angles, Dicalite L-5 can help you. This Dicalite Flattening Agent produces paints that are flat from *any* angle, because of the unique structure of the diatom particles, their fineness and their great surface area. In rooms with long unbroken wall or ceiling areas, paints flatted with Dicalite will not glare or shine at any angle.

Also, in producing egg shell or semi-gloss finishes, Dicalite Extenders and Flattening Agents give accurate and reliable control of gloss to any degree desired—and the control is easy, not "critical." Dicalite is available in several grades, with a wide range of properties to fit them for the production of all kinds of finishes. Data and suggested formulations on request. Write for Bulletin C-21.



Dependable **Dicalite**
GREAT LAKES DIATOMACEOUS MATERIALS

DICALITE DIVISION
GREAT LAKES CARBON CORP.
614 S. FLOWER STREET
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REARDON

Ralph H. Smith has been appointed sales representative in Oklahoma and northern and western Texas. His territory will include Dallas, Ft. Worth, Lubbock, Amarillo, Wichita Falls and all cities in Oklahoma.

He received his territorial assignment after a four month's training program conducted by the company's St. Louis Sales Manager, James E. Cody. Mr. Smith has had more than 15 years' experience in sales and sales management.

CALVERT-MT. WINANS

M. Alvin Rose has been appointed Sales Manager. He has had fifteen years experience in sales of raw materials to the protective coatings industry.

DIAMOND ALKALI

Robert R. Wood, C. Robert Powell, Charles H. Gillespie, Charles B. Kayser and **Louis P. Lambros** have received assignment changes in the field sales and service organization of the company.

Mr. Wood, a member of the New York sales staff since January 1949, has been promoted to Special Staff Assistant in the Sales Department at Cleveland, effective approximately September.

His successor in New York is Mr. Powell, who has been transferred from Cincinnati, where he is being succeeded by Mr. Gillespie as sales representative in the Louisville area.

Mr. Kayser, on the Cincinnati sales staff since May 1948, will now represent the company at Columbus, with headquarters at Columbus, Ohio.

Mr. Lambros, formerly at the Central Order Department at Cleveland, has been named to succeed Mr. Kayser in Cincinnati.

WITCO CHEMICAL

Henry W. Rojas has been appointed Vice-President of Export Marketing it was announced by Max A. Minnig, Executive Vice-President.



H.W.
Rojas

Mr. Rojas, a specialist in export chemical sales, will be responsible for all present international operations of the company. In addition it is expected that he will increase the company's activities in the export market by developing new outlets for chemicals and carbon blacks. His headquarters will be in New York.

For the past 21 years he has been with the American Cyanamid Co., most of the time as Export Manager of the Industrial Chemical Div. and Manager of the Dyes and Chemicals Dept. of the Cyanamid Interamerican Corp.

GENERAL ELECTRIC

Dr. A. Eugene Schubert has been appointed Manager of Engineering for the Chemical Materials Dept. He joined the company at the Research Laboratory in 1942.

He was a pioneer researcher on silicones and also helped engineer the company's new silicone plant at Waterford, N.Y. In addition, he worked on the development of Permafls and had technical responsibility for the operation of the pilot plant. In 1945 Dr. Schubert became head of the Research Laboratory's chemical process section, the position he held prior to his new appointment.

C. W. "Bill" Peters has been appointed to supervise the alkyd resin Customer Service unit. He succeeds **L. J. "Len" Sacks** who was recently promoted to Supervisor-Sales Administration and Control in the company's Schenectady headquarters.

Mr. Peters joined the company in 1942, and rose to Supervisor of Production Scheduling in 1950. He has a thorough knowledge of Glyptal resin and allied product production and scheduling.

CORRECTION

In the June issue under personnel changes for Shell Chemical Co. the photographs for W. A. McCormick and R. W. Campbell were inadvertently transposed.

IMPERIAL...Pioneers for 42 Years in Color Progress...Industry Leadership



IMPERIAL'S color plants are located in picturesque Glens Falls, Gateway to New York State's Adirondack Mountains, on the banks of the Hudson, where its sparkling mountain waters turn south for the 200 mile trip to New York City.

IMPERIAL is the world's largest producer of chemical pigment colors, a result of continuous research and development as well as expansion in plant and laboratory facilities. New types of colors and improvements in conventional products, coupled with technical skills applied to research, product control, and customer service have been responsible for an ever increasing demand for Imperial colors.

Pigment Color
Division

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Titanox research on **white** paint helps



keep you in the **black**

If the perfect outside white paint is ever found, chances are it will be found here at the Titanium Pigment Corporation's Testing Station, Sayville, Long Island.

First, last, and always this station is devoted to paint improvement. First of its kind to test titanium pigmented paints . . . it's the last word in modernity. And it tests paint in all ways. 30,000 paint panels on the 20-acre tract take a beating from all kinds of weather. All types of formulations are applied to all kinds of surfaces . . . woods, metals, masonry,

etc. The results of these tests help us to help you make long-lasting, whiter whites . . . help keep you in the black.

Consult our Technical Service Department with your problems in outside paints. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Atlanta 2; Boston 6; Chicago 3; Cleveland 15; Houston 2; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 14, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

TITANOX[®]
the brightest name in pigments



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PATENTS

Complete copies of any patents or trade-mark registration reported below may be obtained by sending 50c for each copy desired (to foreign countries \$1.00 per copy) to the publisher.

Etherified Condensation Products

U. S. Patent 2,709,693. Gustav Widmer, Basel, Switzerland, assignor to Ciba Limited, Basel, Switzerland, a firm of Switzerland.

An air-drying ether of a formaldehyde condensation product of an aminotriazine containing at least two NH_2 -

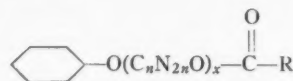
groups in which ether at least one hydroxymethyl group per NH_2 -group present in the aminotriazine is etherified with a monohydric unsubstituted unsaturated aliphatic alcohol having at least 18 carbon atoms and containing at least two double bonds.

Vinyl Resin Compositions

John D. Brandner and Robert H. Hunter, Wilmington, Del., assignors to Atlas Powder Company, Wilmington, Del., a corporation of Delaware.

A plasticized vinyl resin composition comprising a resin selected from the group consisting of polyvinyl chloride and copolymers of vinyl chloride and vinyl acetate containing a maximum of 15% vinyl acetate, and from 15% to 67% based on the resin of a plasticizer consisting of a primary plasticizer and a secondary plasticizer selected from the group consisting of phenoxy-ethyl laur-

ate, phenoxyethyl oleate, phenoxyethyl tall oil ester and esters corresponding to the formula



wherein n is a whole number from 2 to 3, $n+x$ is 4, and



is selected from the group consisting of acyl radicals of fatty acids containing from 12 to 18 carbon atoms and the mixed resin and fatty acyl radicals of tall oil acids, the proportion of said secondary plasticizer to said vinyl resin being not less than 5 to 100 and not more than 25 to 100 and said secondary plasticizer being not more than 50% of the total plasticizer.

Stabilization of Zinc Sulfide White Pigment

U. S. Patent 2,711,968. George F. Conery, Indian Orchard, and George W. Ingle, Hampden, Mass., assignors to Monsanto Chemical Company, St. Louis, Mo., a corporation of Delaware.

A white pigment stable to actinic radiation consisting of 100 parts of substantially pure zinc sulfide and from 40 to 45 parts of magnesium oxide having a particle size ranging from 0.05 to 0.1 micron.

Corrosion Resistant Coatings On Metal Structures

U. S. Patent 2,711,972. William T. Miller, Ithaca, and Abraham D. Kirshenbaum, New York, N. Y., assignors to the United States of America as represented by the United States Atomic Energy Commission.

The method of treating a metal structure which comprises forming thereon a film of polyperfluorobutadiene and treating the film in situ with fluorine to produce an adherent coating resistant to corrosion by halogens and metal halides.

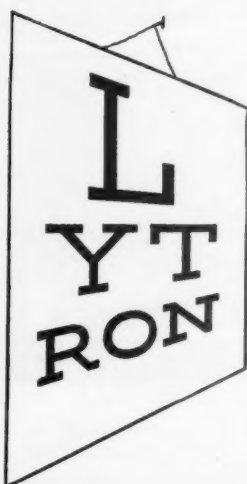
Stabilized Chlorine Containing Vinyl Resins

U. S. Patent 2,711,401. Robert E. Lally, Bedford, Ohio, assignor to Ferro Corporation, Cleveland, Ohio, a corporation of Ohio.

A composition of matter comprising a chlorine containing vinyl resin and from about 0.5% to about 8.0% by weight, based on said resin, of a stabilizer, said stabilizer comprising an admixture of from about 1 to about 5 parts of a salt of a carboxylic acid of the class consisting of the aliphatic and cycloaliphatic carboxylic acids and mixtures

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thereof with a metal selected from the class consisting of magnesium, calcium, strontium, barium, zinc, cadmium, mercury, tin and lead and from about 1 to about 5 parts of a compound selected from the class consisting of aliphatic polyhydric alcohols having at least two and not more than nine hydroxyl groups and a boiling point not less than 250° F., esters of aliphatic polyhydric alcohols said esters having at least two and not more than nine hydroxyl groups and a boiling point not less than 250° F. and ethers of aliphatic polyhydric alcohols said ethers having at least two and not more than nine hydroxyl groups and a boiling point not less than 250° F.

Coating Glass

U. S. Patent 2,710,267. Thomas Boyd, Springfield, and Robert M. Dickey, North Wilbraham, Mass., assignors to Monsanto Chemical Company, St. Louis, Mo., a corporation of Delaware.

A process for coating glass which comprises coating glass with a substantially anhydrous pigment-free organic solvent solution of a straight-chain polymer of a tetraorgano derivative of orthotitanic acid, evaporating the solvent and reacting the polymer with water to form a continuous transparent strongly-adherent water-insensitive coating on the glass.

Dehydration of Castor Oil

U. S. Patent 2,711,416. Ronald J. Carter, Slough, John S. Gourlay, Maidenhead, and James K. Lovell, Slough, England, assignors to Imperial Chemical Industries Limited, a corporation of Great Britain.

A process of dehydrating castor oil comprising continuously passing castor oil and a dehydration catalyst into a vessel in which the mixture is vigorously agitated and maintained at a temperature of 260° to 375° C., the treated oil being withdrawn from the vessel at such a rate as to maintain a substantially constant volume of liquid in the vessel, the ratio of the said volume to the volume of castor oil added per minute being from 0.5:1 to 10.0:1.

Setting Liquid Protein Containing Coatings

U. S. Patent 2,710,815. Richard V. Young and George S. Dundon, Rochester, N. Y., assignors to Eastman Kodak Company, Rochester, N. Y., a corporation of New Jersey.

In the application of coatings from solutions in water of at least 2% concentration of proteins, a method of quick setting those coatings which comprises incorporating into the protein solution having a pH of less than 5¼—50% (based on the weight of the protein) of a water soluble aluminum salt, coating out the solution in fluid

form onto a surface and fuming the resulting coating with an ammonia containing gas whereby rapid setting of the coating is obtained without chilling of said coating being necessary.

Synthetic Film

U. S. Patent 2,711,996. Charles H. Hofrichter, Jr., Snyder, N. Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del., a corporation of Delaware.

A transparent film comprising essentially a vinylidene chloride copolymer containing from 80% to 94% of vinylidene chloride as the sole film-former and, based on the weight of said copolymer, from 0.2% to 1.0% of a fatty acid containing from 16 to 18 carbon atoms, and 0.05% to 2.0% of finely divided calcium carbonate.

A slip agent comprising essentially 2 to 10 parts of an ester wax, 2 to 10

parts of a fatty acid containing from 16 to 18 carbon atoms, and 0.5 to 20 parts of finely divided calcium carbonate.

LANCASTER, ALLWINE & ROMMEL REGISTERED PATENT ATTORNEYS

Suite 424, 815 — 15th St., N. W.
Washington 5, D. C.

Patent Practice before U. S. Patent Office. Validity and Infringements Investigations and Opinions.

Booklet and form "Evidence of Conception" forwarded upon request.

The advertisement for Piccolastic Resins features a central chemical structure diagram showing a polymer chain with a vinylidene chloride unit and a side chain containing a cyclohexane ring. Above the diagram are three circles labeled "Thermoplastic", "Soluble", and "Resistant". Below the diagram, the text reads "PICCOLASTIC RESINS" in large, bold letters. To the right of the text is a cartoon character of a man in a suit, looking surprised or excited, with his arms raised.

24 standard grades—polymers of styrene and its homologues

Piccolastic Resins are made in five series and twenty-four standard grades. They are polymers, in a wide range of average molecular weights, of styrene and its homologues.

They possess sufficient pale color so as to be suitable for the majority of uses. The entire line is soluble in aromatic hydrocarbons.

The Piccolastic Resins, with the exception of one type, are wholly hydrocarbon in structure, and therefore are alkali and acid resistant to a high degree, do not support mold or other fungus growth, and are not subject to enzyme reaction.

The Piccolastic Resins are permanently thermoplastic, and because of their heat stability at temperatures up to at least 175 C. make excellent stable, hot melt compounds.

Piccolastic Resins vary from viscous liquids through tacky solids, brittle solids to resins of hard horny toughness. Intermixtures of the various items permit an unlimited range of properties.

Pennsylvania Industrial Chemical Corp.

Clairton, Pennsylvania

Plants at:

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District Sales Offices

New York, Chicago, Philadelphia, Pittsburgh, Detroit



Pennsylvania Industrial Chemical Corporation
Clairton, Pennsylvania

Please send bulletin and samples of Piccolastic Resins for (application)

Name _____

Position _____

Company _____

Address _____

(PVP)

NEWS

(From page 47)

U. S. Navy," by W. W. Cranmer, Philadelphia Naval Shipyard. There was an attendance of about 250 members of the committee.

The new Tentative Recommended Practice for Reporting Particle Size Characteristics of Pigments (D-1366), was considered a timely contribution. It answers a long-felt need for reporting fineness characteristics of pigments in the subsieve range. By use of this

method of reporting, it is possible to make comparison when pigments are tested by any one of several methods now in use such as the microscopic, sedimentation, and turbidimetric methods; and partially to absorption and permeability methods.

There were two new tentative methods for fire retardancy of Paints, namely, the Cabinet Method (D 1360) and the Stick and Wick Method (D1361). Both fill a real need in view of the recent development and use of nonflammable type paints. Continuing its plan to establish separate methods for the various procedures now covered in the general Methods of Sampling and Testing Lacquer

Solvents and Diluents (D 268), three new tentative methods, were presented, covering, respectively, Alcohol in Methyl Isobutyl Ketone (D1362), Permanganate Time of Lacquer Solvents and Diluents (D 1363), and Test for Water in Lacquer Solvents and Diluents (Fischer Reagent Titration Method) (D1364).

An important addition to the Test Methods for Traffic Paint was a new laboratory test for determining the length of drying time after application for no-smear of traffic or pavement-marking paint by the tire of an automobile. A new method for spectrophotometric Diene Value of Dehydrated Castor Oil and Its Derivatives was presented as tentative. For use in determining small daylight color differences between surface colors, there was presented a new Tentative Method of Test for Color Difference Using the Hunter Color Difference Meter (D 1365).

Oil Seed Products Panel To Be Held In September

A symposium, "Marketing the Products of Lil Seeds," will be held September 12 in Minneapolis as part of the American Chemical Society's 128th national meeting.

Dr. Malcolm M. Renfrew of Spencer Kellogg and Sons, Inc., Buffalo, will preside.

Following is the program:

Introductory Remarks—M. M. Renfrew.

Commodity Trading In Oil Seeds and Their Products—E. H. Russell.

Technical Representation in the Shortening Industry—W. F. Schroeder.

The Lecithin Story—With a Moral—Joseph Eichberg.

Marketing of Vegetable Oil Seed Proteins—H. A. Olendorf and M. W. Dippold.

Developing Markets for Fatty Acids—E. Scott Pattison.

Are the Vegetable Oil Producers Really Promoting Their Products to Paint and Resin Manufacturers?—Charles G. Moore.

How the Vegetable Oil Producers Expect to Meet the Needs of the Paint Industry—Max Kantor.

New Product Development Programs for Processors of Vegetable Oil Seeds—George K. Nelson.

**LESS THAN
1¢
A GALLON**

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remove the odor from
your paint with Maskit #2**

- Makes your paint more acceptable to painters and home owners.
- Masks the odor in the can and while paint is being applied . . . as well as during - and after - the drying period.
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- Amazingly economical . . . use 1 lb. of Maskit #2 to 150 gallons of paint.

MASKIT #2 is equally effective in paints, lacquer thinners, varnishes and other similar types of products. Order a trial pound today!

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NEWS

Hercules Constructing New \$6 Million PE Plant

Hercules Powder Co. has announced plans to start immediate construction of a new plant for the production of pentaerythritol (PE), representing a total investment of approximately \$6 million.

Completion of this plant, scheduled for late next year, will double the company's present annual capacity.

Located in the midwest, on the site of an existing Hercules anhydrous ammonia plant at Louisiana, Miss., the plant will have an annual production of 24 million pounds of PE and 100 million pounds of formaldehyde, a basic raw material for PE.

The new plant, according to Dr. Wylly M. Billing, General Manager of the Synthetics Department, will be an integrated one with automatic controls and other innovations in equipment and process which have been developed at the Mansfield, Mass. plant and at the central research laboratories in Wilmington, Del.

Reichhold Plans \$10,000,000 Long Range Expansion

Arrangements for a \$10 million combination bank loan and debenture have been completed by Reichhold Chemicals, Inc. The money will be used for long range expansion and additional working capital, according to Henry H. Reichhold, General Manager.

The need for increased working capital for expanded manufacturing facilities was made clear, Mr. Reichhold said, by the end of the first quarter of 1955 when the company found itself completely committed for the balance of the year on all the basic chemicals its present facilities can produce, except phenol and pentaerythritol.

Those unavailable until 1956 include phthalic anhydride, maleic anhydride, formaldehyde, glycerine, sodium sulfite and sodium sulfate.

W. H. Fellows Installed As Pres. of L.A. Paint Ass'n

William H. Fellows, Executive Vice President of Old Colony Paint & Chemical Co. has been installed as President of the Los Angeles Paint, Varnish and Lacquer Association.

Other officers installed are: R. E. Alexander, Vice President, and G. D. Wartman, Secretary-Treasurer. Alexander is Division Manager of the U. S. Industrial Chemicals Division of the National Distillers Products Corp. while Wartman is Local Division Manager of the Sherwin Williams Paint Co.

The Los Angeles Paint, Varnish and Lacquer Association is comprised of 241 member firms which are manufacturers or suppliers in the southern California paint industry.

New Fibre Drum Plant

Continental Can Co. has started construction on a one-story plant in Midland, Mich., for the manufacture of fibre shipping drums, it was announced by Carl E. Eggers, Vice President in charge of the Fibre Drum Division.

The plant is expected to be in production by December, and will employ approximately 125 persons. The company operates five other fibre drum plants.

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HEYDEN'S TRIMETHYLOLETHANE

FOR ALKYDS,
POLYESTERS,
ISOCYANATE RESINS,
AND
DRYING OILS

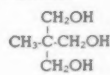
TME[®] Resins excel in:

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- Retention of color and gloss
- Heat stability
- Durability
- Amino resin compatibility

TME[®] is easy to process:

- Fast alcoholysis
- No decomposition
- Negligible volatile loss
- Free-flowing powder

Formula:



Properties:

Molecular weight—120.15
Appearance—white crystalline powder
Melting point—201°C.
Hydroxyl content—42.3%
Combining weight—40.2

TME[®] is shipped in handy 50 lb. multi-wall bags.
Technical bulletin and samples available on request.



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NEWS

Witco Forms Four Units To Handle Domestic Sales

Major reorganization of the domestic sales force of the Witco Chemical Co. into four regional units, each under the supervision of a resident Regional Vice President, has been announced by Max A. Minnig, Executive Vice President.

The basic reason behind this realignment is a streamlining of the sales operation to provide better

customer service and convenience, according to the company. The four new regions are designated as Eastern, Ohio and Southern, Midwest, and West Coast.

The Eastern region, embracing the New England States, majority of New York and Eastern Pennsylvania, and extending south to the Virginia—North Carolina state line, will be headed by Michael Vaccaro, whose headquarters will be in New York. The Boston sales office, under the direction of C. W. Grubb will be retained.

The Ohio-Southern region, including the southern states, Ohio and Western Pennsylvania, will be supervised by Harry M. Brubaker, with offices in Akron, Ohio. Witco's Atlanta office will be retained

under the direction of C. A. Damen.

The Mid-West region, extending from Indiana to the Rocky Mountains and south to Texas and Louisiana, will have headquarters in Chicago, under the supervision of Jerome S. Harrison. Witco's Houston office under direction of A. B. Craig, will be retained.

The West Coast region, under direction of Stanley M. Freeman who will continue to be located in Los Angeles, will include all states west of the Rockies. The company's San Francisco office will be retained. It is under supervision of W. J. Butler.

To Build New Plant

Celanese Corporation of America will shortly begin construction of the first unit of a new chemical manufacturing plant at Gallipolis Ferry, five miles south of Point Pleasant, W. Va., it was announced by R. W. Kix Miller, Vice President in charge of the Chemical Div.

New Pennsalt Division

Sharples Chemicals Inc., dissolved as a corporation in July, has become an operating division of the Pennsylvania Salt Manufacturing Co., it was announced by President William P. Drake.

Sharples was acquired by Pennsalt Chemicals through an exchange of stock in 1951. Its operations will continue without change under the direction of Lee H. Clark, General Manager.

Devoe Grants Resin Rights

Devoe & Raynolds Company, Inc., has signed an exclusive foreign epoxy resin patent license agreement with the Royal Dutch Shell Group, granting international rights to Devoe's epoxy resin patents, it was announced by J. C. Knochel, Vice President of the Louisville, Ky. paint and chemical company.

Gross Names Distributor

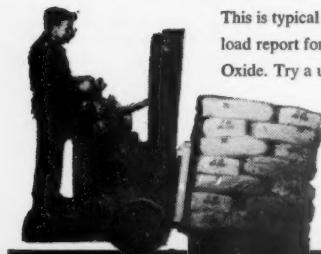
Carl A. Lechner Co., Chicago, has been named distributor there for A. Gross & Co., New York City, it was announced by Eugene W. Adams, Vice President of Gross. Lechner will handle the complete line of fatty acids and glycerides.



"car arrived in excellent physical condition"

This is typical of the reports received from customers on our customer unit-load report form. This form accompanies each unit-load car of St. Joe Zinc Oxide. Try a unit-load shipment of St. Joe Zinc Oxide and experience:

1. A saving of up to 50% of the unloading cost
2. Increased storage capacity
3. Improved material handling
4. Greater cleanliness



OUR 6 PAGE ILLUSTRATED FOLDER, CONTAINING DETAILED OPERATING DATA ON THE ST. JOE UNIT-LOAD METHOD IS YOURS FOR THE ASKING.

ST. JOSEPH LEAD COMPANY
250 Park Avenue, New York 17
Plant & Laboratory: Monaca (Josephstown) Pa.

New Books

ASTM Standards On Paint

Issued January 1955. Published by American Society For Testing Materials, 1916 Race St., Philadelphia 3, Pa. 868 pages. Price \$6.

"ASTM Standards on Paint, Varnish, Lacquer, and Related Products," is the ninth edition of this particular compilation. It provides in convenient form the latest review of the more than 200 specifications, tests, and definitions issued by the American Society for Testing Materials in this field.

The work is conducted by Committee D-1 on Paint, Varnish, Lacquer and Related Products and through co-operation with the Federation of Paint and Varnish Production Clubs. Some 60 standards in this publication have been approved as Federation Standards.

Included as information only are proposed specifications published in draft form for the purpose of soliciting comments.

The contents of this compilation include listings under the broad general headings of: Pigments; Drying Oils, Paint Driers and Thinners; Shellac, Varnish and Varnish Materials; Naval Stores; Cellulose and Cellulose Derivatives; Lacquer and Lacquer Materials; Traffic Paint; Bituminous Emulsions; Printing Inks; Paint Tests, Putty; Paint Weathering Tests.

Principles of Emulsion Technology

By Paul Becker. Published by Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y. 149 pp. Price \$2.95.

In Reinhold Pilot Book Number 5, Paul Becker reviews the principles of emulsion technology.

This book is written for those who have studied chemistry and are now desirous of learning more about both theoretical and applied emulsions than the passing mention given the topic in physical chemistry courses. Although the theoretical discussion is largely physico-chemical, those without formal training in the subject should be able to follow the presentation with minimum difficulty.

Contents include: 1) dispersions and emulsions, 2) surface activity, 3) theory of emulsions, 4) the chemistry of emulsifying agents, 5) emulsification equipment, 6) the testing of emulsion properties, 7) emulsion formulation, 8) demulsification. General references and index are also included.

CLASSIFIED ADVERTISEMENTS

Rates: \$.20 per word, except those seeking employment, for which rate is \$.10 per word. Minimum: ten words. Address all replies to Box Number, c/o Paint and Varnish Production, 855 Avenue of the Americas, New York 1, New York.

JUNIOR CHEMIST

We have an unusual opportunity for a young college graduate with a major in chemistry, who has completed his military training, for research and development work in our Industrial Finishes Laboratories (Paints and Varnishes.) Our company is well established, having been in business over fifty years: Location, South Jersey. Salary will be commensurate with experience and training. In your reply, please give age, marital and military status, educational background. Address:

Post Office Box 557
Camden, New Jersey.

Resin Latex

Plans to expand production of vinyl acetate resin latex, base resins of new, durable and easy-to-apply paints and coatings for interior or exterior use, have been announced by Bakelite Co., a Division of Union Carbide and Carbon Corp. Announcement of these major expansion plans for this water-resistant resin latex known as Bakelite vinyl resin latex "WC-130" was made by Roger A. Calsibet, Manager, Surface Coating Materials Div.

G. Haslam of N. J. Zinc Dies

George S. Haslam, Chief of Products Application in the Research Department of The New Jersey Zinc Co. (of Pa.), died in July. He had been with the company for 31 years.

The right **BLACK**
for every formulation



Superior pigment blacks

- No. 32
- No. 50
- No. 100
- Hitone
- F-1
- F-2
- F-3

All available in powder or pelletized form

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35 Years of Growth

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PAINT FIELD

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**ONLY \$3.00 a year
\$5.00 For 2 years**

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855 Ave. of the Americas
New York 1, N. Y.**

THE "COLD-MIX" VARNISH TECHNIQUE

(From page 29)

Figure 7

Formula Suggestion EF-1939

Gray Enamel

FORMULA:

	Pounds	Gallons	Percentage By Weight
Titanium Dioxide (Rutile)	340.65	9.74	31.96
Zinc Oxide	60.14	1.29	5.64
Lamp Black	2.83	0.19	0.27
VF-1909	656.44	88.11	61.59
24% Lead Drier	2.68	0.28	0.25
6% Cobalt Drier	1.07	0.13	0.10
6% Manganese Drier	0.56	0.07	0.05
Anti-skinning Agent	1.48	0.19	0.14
THEORETICAL YIELD	1065.85	100.00	100.00

PEBBLE MILL GRINDING PROCEDURE: Grind the pigment and all of the vehicle until a satisfactory dispersion is obtained.

PERCENTAGE COMPOSITION (by weight):

Pigment — 37.87%		Vehicle — 62.13%	
	Per Cent		Per Cent
Titanium Dioxide	84.40	VF-1909	98.98
Zinc Oxide	14.90	Driers and anti-skinning agent	1.02
Lamp Black	0.70		
	100.00		100.00

PROPERTIES:

Weight per Gallon	— 10.66 lbs.
Pigment Volume Ratio	— 20%
Non-Volatile	— 73.41%
Viscosity	— 82 Krebs Units (200 gr. wt. at 77° F.)
Gloss	— 100+ on 60° Glossmeter
Reducing Thinner	— Mineral Spirits


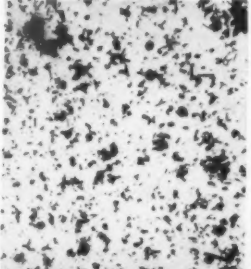
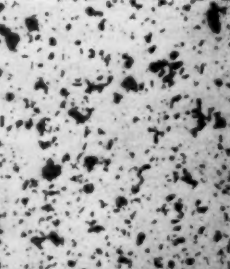
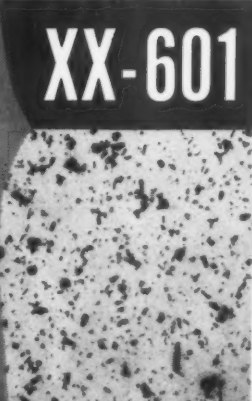


other desirable properties of these fortified alkyds, ester gum varnishes and modified phenolic varnishes improve with increasing proportions of the 100 per cent phenolic resin. However, where more than 10 per cent is added it is suggested that the coating be adjusted with bodied oil or a mixture of bodied oil and tung oil to maintain the desired oil length.

In the field of industrial maintenance alone, the "cold-mix" technique makes it possible to produce an infinite number of paints covering a wide range of properties through the use of a BR-9400 resin solution and minor changes in oils, pigments, extenders and driers. By virtue of this "cold-mix" for-

mulating procedure, coatings suppliers can obtain maximum formulation flexibility with a minimum inventory. "Custom" coatings can be compounded to fit a majority of coating applications. The abrasion resistance, drying speed, hardness, water-spotting resistance and gas-proofness of economical coatings also can be improved over an extremely wide range while still maintaining only a basic stock of varnishes.

It is not expected that the "cold-mix" technique of preparing varnishes will supplant that of conventional varnish making but rather that it will supplement standard techniques by offering increased flexibility in formulation.

A Good Family to Know...

The HORSE HEAD FAMILY of LEAD-FREE ZINC OXIDES <i>Electron Micrographs at 2500 Diameters</i>			
	XX-601	XX-2	XX-50
			
	XX-505	XX-503	XX-55

MEET THE Horse Head family of American Process lead-free zinc oxides . . . the largest, most diversified group of its kind . . . the result of a century of development to help you make products of even higher quality.

Here's why this renowned Horse Head family is tops in the paint industry:

Paint chemists formulate faster and better when they use this group with its wide choice of consistencies, particle sizes and shapes —spherical, nodular and acidular.

Superintendents tell us that Horse Head zinc oxides are unexcelled for day-in-and-day-out and year-in-and-year-out dependability that results in faster, more uniform production.

Purchasing agents can carry this family in stock and still maintain lower inventories than are possible with additional sources of supply.

If you are not already using this Horse Head family, we shall be glad to discuss its application to your specific problems.



THE NEW JERSEY ZINC COMPANY

Founded 1848

160 Front Street, New York N. Y.

NEWS

F. L. Sulzberger Chairman Of Development Group

Frank L. Sulzberger, Chairman of the Board, Enterprise Paint Manufacturing Co., Chicago, has been elected to the Board of Trustees of the Committee for Economic Development.

Also named to three-year terms on the board of the national non-profit economic research and education organization were: William

Allen, President, Boeing Airplane Co., Seattle; Joseph L. Block, President, Inland Steel Co., Chicago; Marvin Bower, Partner, McKinsey & Co., New York; Thomas D. Cabot, President and Director, Godfrey L. Cabot, Inc., Boston; George H. Coppers, President and Director, National Biscuit Co., New York; H. H. Corey, Chairman, George H. Hormel & Co., Austin, Minn.; John M. Fox, President, Minute Maid Corp., New York; Joseph A. Martino, President and Director, National Lead Co., New York; Louis B. Neumiller, President and Director, Caterpillar Tractor Co., Peoria, Ill.; James Symes, President, Pennsylvania Railroad, Philadelphia;

and James E. Webb, Director, Kerr, McGee Oil Industries, Inc., Oklahoma City.

Composed of 150 leading businessmen and educators who form its Board of Trustees, CED conducts a national program of research and education in a continuing effort to determine public and private policies which will maintain high employment, production and rising standards of living.

Improve Lining Material For Steel Containers

The number of products considered "hard-to-package" has been greatly reduced with the introduction of an improved lining material for steel shipping containers, according to an announcement by Livingston Keplinger, President, Steel Shipping Container Institute.

Designated as "Synthetazine 200," the material is a combination of thermosetting phenolic and epoxy resins developed by scientists at Battelle Memorial Institute, Columbus, Ohio. The development came about as part of a continuous research program on protective coatings being sponsored by the Steel Shipping Container Institute.

"While 'Synthetazine 200' is not a universal protective coating," Mr. Keplinger said "it does protect many products which formerly could not be packaged successfully in lined steel containers."

Thus far the coating has proved successful for a variety of products and indications are favorable for widespread use. Mr. Keplinger stated that manufacturers who have new hard-to-package products may always submit samples for testing. Among products already tested are compounds such as styrene monomer, sodium alkyl sulfonate detergent, vinyl chloride latex and sulfated fatty alcohol detergent, to name a few. It is expected to be excellent in general for alkali, detergents, chlorinated solvents, fatty acid, emulsions, aromatic and aliphatic hydrocarbons and food products.

The coating is being produced by licensees of Synthetazine Protective Coatings, Inc., 600 Fifth Ave., New York 20, N. Y., whose stock is wholly owned by members of the Steel Shipping Container Institute.

Concerned about BLUSH?
TRY THIS

1

MEASUREMENT

Use the new Gardner-Sharples Blush Cabinet for quick, accurate blush measurement. Available from: Gardner Laboratory Inc., Bethesda, Md.



2

CONTROL

Control lacquer blushing by using Amyl Acetate 280 as your major solvent. It combines "built-in" blush resistance with high solvent power.

Send for samples and technical literature.

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NEWS

Nominations Open For 1955 Glycerine Awards

The Glycerine Producers' Association is now accepting nominations for the fourth annual Glycerine Research Awards. First award is \$1,000 and an honor plaque; second, \$300 and honor certificate; and third, \$200 and honor certificate.

Research bearing on the chemical, physical or physiological properties of glycerine, or of the properties of glycerine-derived or glycerine-containing materials is eligible. Work exhibiting originality in extending glycerine's usefulness in new applications will merit special consideration.

Nominations must be made on official entry blanks and must be received by November 1. Entry blanks and complete details can be obtained by writing to the Awards Committee, Glycerine Producers' Association, 295 Madison Ave., New York 17, N. Y.

Three New Sales Agents

The appointment of three new chemical sales agents in the paint manufacturing industry has been announced by L. W. Reeves, Manager of Chemical Sales for the General Tire & Rubber Co., Akron, Ohio.

They are: The Cary Co., which will cover Chicago and surrounding areas in southeastern Wisconsin, northern Illinois, and northwestern Indiana; Harry A. Baumstark and Co., St. Louis, which will cover St. Louis, most of Missouri, and parts of Illinois, Iowa, Indiana, Kentucky and Arkansas; Thompson-Hayward Chemical Co., Kansas City, which will cover territories surrounding its offices in Minneapolis, Davenport, Des Moines, Omaha, Denver, Wichita, Little Rock, Memphis and Tulsa.

Foster Retires From MCA

William C. Foster has resigned as President and Director of the Manufacturing Chemists' Association, Inc. He became MCA's first full-time President two years ago.

Amsco Finishes Terminal

Completion of new storage and distribution facilities located in Brooklyn, N. Y. was announced by E. M. Toby, Jr., President of American Mineral Spirits Co.

The terminal will receive petroleum solvents by barge from Amsco's deep water terminal at Carteret, N. J. A wide range of naphthas, solvents, and chemicals will be maintained at the Brooklyn terminal for tank wagon and drum delivery.

N. J. Storage Plant Bought

Chemical Producers Service, Inc., has acquired the plant at Port Reading, Woodbridge, N. J., formerly owned by Petroleum Solvents

Corp. and will operate it as a liquid chemical storage terminal with facilities for private label packaging, drumming, canning, blending, laboratory research and formula development.

Eagle-Picher Names Agent

Appointment of Griffith-Mehaffey Co., Inc., New Orleans, as agents for the Pigment Division of the Eagle-Picher Co. has been announced.

The company will be active in the sale and distribution of the entire Eagle-Picher line of lead and zinc pigments in New Orleans and the major portions of Mississippi, Alabama and Louisiana.



Why this Hockmeyer Horizontal Paste Mixer brings you 3 IMPORTANT ADVANTAGES

1. Faster mixing
2. Greater efficiency
3. Easier cleaning

The Hockmeyer Horizontal Paste Mixer's 3 sets of mixing blades are specially designed, precision built. They eliminate "dead spots" and material build-up on tank sides. Their double rolling action agitates the batch into a homogenous mass in the shortest possible time. The unit is excellent for lead pastes, wood fillers, caulking compounds, color dispersions and other heavy, non-flowing materials. Its greater mixing efficiency provides a bonus in the form of lower horsepower requirements.

One of the Hockmeyer Horizontal Paste Mixer's most important advantages is that it is self-unloading. Its unusual mixing action pushes out even viscous, non-flowing materials; the bottom center gate outlet controls the rate of flow.

Cleaning this mixer is easy. Just place a solvent in the machine and start the motor.

The Hockmeyer Horizontal Paste Mixer is safe to use, too. All external moving parts are covered with a steel guard. A removable steel grating over the top opening prevents anything falling in and being caught in the blades.

The Hockmeyer Horizontal Paste Mixer is a valuable unit on both continuous and changing batch operations. Write today for free technical data sheet.



3 sets of blades touch every area of tank during mixing action!

Herman Hockmeyer and Company PVP-85
341 Coster St., New York 59, N. Y.

GENTLEMEN: Please send me your free, illustrated technical data sheet describing the Hockmeyer Horizontal Paste Mixer

My name _____
Company _____
Address _____
City _____ Zone _____ State _____



HERMAN HOCKMEYER & CO.
341 COSTER ST., NEW YORK 59, N. Y.

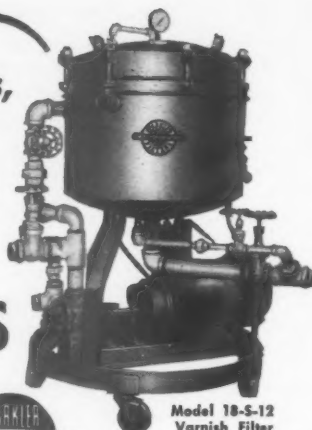
**Remove "Fish Eyes", Skins,
Incidental Solids and
Semi-Solids from Varnish
and Lacquer with . . .**

SPARKLER FILTERS

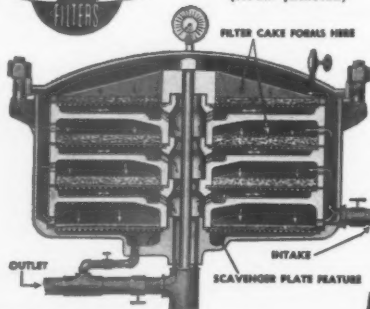
Many varnish makers now use Sparkler Filters to clarify varnish, lacquers, and other clear liquids. The brilliance and polish obtained by filtering with Sparkler Filters is far superior to results obtained with other methods of clarifying paint products.

Our engineers are ready to give personal attention to your problems.

Write Mr. W. J. Kracklauer.



Model 18-S-12
Varnish Filter
(steam jacketed)



SPARKLER

**MANUFACTURING COMPANY
MUNDELFIN, ILL.**

Makers of fine filtration installations for industrial use for over a quarter of a century

MICA

WATERGROUND AND MICRO

For

DURABLE PRIMERS—HOUSE PAINTS ANTI-CORROSIVE COATINGS

Excellent for a well-knit, durable film . . . less penetration, running and sagging . . . better adhesion and bridging . . . more washable and longer weathering.

Our finest Micro Mica is an excellent flattening agent for this type of paint.

The English Mica Co.

STERLING BUILDING

STAMFORD CONN.

Build New Canco Plant

Construction of the American Can Company's new factory in Arlington, Texas is expected to start sometime early this month, it was announced by M. P. Cortilet, Vice President in charge of the Central Division.

The factory, which will employ about 170 people, will have an annual rated capacity for 300 million cans.

New Tanker Run

Columbia-Southern Chemical Corp. will participate in the newly inaugurated tanker run from Gulf Coast ports to Northeastern markets by shipping caustic soda on all trips, the company has announced.

The pick-up port will be Lake Charles, La., and the delivery point the company's tank farm in Carteret, N. J.

CALENDAR OF EVENTS



Aug. 29-31. Joint Meeting of American Soybean Assoc. and Nat'l Soybean Processors Ass'n., Netherlands Plaza, Cincinnati, Ohio.

Sept. 11-16. Fall Meeting of Div. of Paint, Plastics and Printing Ink Chemistry, ACS, Minneapolis, Minn.

Oct. 3-5. 33rd Annual Meeting, Federation of Paint and Varnish Production Clubs and 20th Paint Industries' Show, Hotel Statler, New York City.

Oct. 31-Nov. 1-2. 67th Convention of National Paint, Varnish and Lacquer Assoc., Shoreham and Sheraton-Park Hotels, Washington, D. C.

Production Club Meetings
Baltimore, 2nd Friday, Park Plaza Hotel.

Chicago, 1st Monday, Furniture Mart.

C.D.I.C., 2nd Monday.
Cincinnati — Oct., Dec., Mar., May, Hotel Alms.

Dayton — Nov., Feb., April, Suttmillers.

Indianapolis — Sept., Claypoll Hotel.

Columbus — Jan., June, Fort Hayes Hotel.

Cleveland, 3rd Friday, Harvey Restaurant.

Dallas, 2nd Thursday, No Fixed Place.

Detroit, 4th Tuesday, Rackham Building.

Golden Gate, 3rd Monday, El Jardin Restaurant, San Francisco.

Houston, 2nd Tuesday, College Inn.

Kansas City, 2nd Thursday, Pickwick Hotel.

Los Angeles, 2nd Wednesday, Scully's Cafe.

Louisville, 3rd Wednesday, Seelbach Hotel.

Montreal, 1st Wednesday, Queen's Hotel.

New England, 3rd Thursday, University Club, Boston.

New York, 1st Thursday, Brass Rail, 100 Park Ave.

Northwestern, 1st Friday, St. Paul Town and Country Club.

Pacific Northwest, Annual Meetings Only.

Philadelphia, 3rd Wednesday, Engineer's Club.

Pittsburgh, 1st Monday, Fort Pitt Hotel.

Rocky Mountain, 2nd Wednesday.

St. Louis, 3rd Tuesday, Forest Park Hotel.

Southern, Annual Meetings Only.

Toronto, 3rd Monday, Diana Sweets, Ltd.

Western New York, 1st Monday 40-8 Club Buffalo.

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PAINT

FLAME PHOTOMETRY

(From page 34)

oleic, linoleic, linolenic, conjugated and saturated acids following the procedure of Brice and Swain (6). This analysis can be carried out in about half a day, compared with the week or more required by chemical methods, and the results are far more accurate and complete.

The procedure of Shreve and Heether (7) for the determination of phthalic anhydride in alkyl resins is another example of the application of the ultraviolet spectrophotometer to routine control problems. Unlike the chemical method, this procedure can be used to determine phthalic anhydride in the presence of fumaric or maleic acid.

Some chemical procedures are so difficult or involved as to preclude, or at least discourage, their adoption as routine control methods. However, these instruments render many such analyses both simple and rapid, thereby making practical the use of these instrumental procedures in a routine control program. Skilled laboratory personnel are not necessary once the procedures have been established.

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4. Beckman Bulletin 91-G, Beckman Instruments Inc., Fullerton 1, Calif.
5. Beckman Bulletin 259A, Beckman Instruments Inc., Fullerton 1, Calif.
6. Brice, B.A., and Swain, M.L., J. Opt. Soc. Amer., 35, 532 (1945).
7. Shreve, O.P., and Heether, M.R., Anal. Chem., 23, 441 (1951).

Rheem To Enter New Field

The Rheem Manufacturing Co. has announced plans to enter the reconditioned drum field in the San Francisco Bay Area and in Southern California. Rheem is one of the nation's largest producers of steel shipping containers.

Gordon W. Mallatratt, Vice President and General Manager of the Rheem Products Division, announced the appointment of T. T. Merry, a veteran in the Pacific Coast reconditioned drum industry, to an executive post as a part of the move.

J. Rockett of Sinclair Dies

Joseph H. Rockett, Assistant Sales Manager of Sinclair Chemicals, Inc., subsidiary of Sinclair Oil Corp., died recently at his home in New York City. He was 47 years old.

Mr. Rockett joined Sinclair Refining Company in 1927 and in 1932 was employed by Wolverine Oil Company in Brockton, Mass. where he worked for ten years in a sales capacity. In 1946, he joined the Domestic Lube Sales Dept. of Sinclair, and in 1951 joined the Petroleum Chemical Sales Div. of Sinclair Refining Co. He was appointed Assistant Sales Manager of Sinclair Chemicals, Inc. on its formation in 1952.

C. J. Osborn Consolidates

C. J. Osborn Co. has announced consolidation of its general office and sales department with its laboratory and plant at 1301 W. Blanke St., Linden, N.J. The move was necessitated by the growth of manufacturing business and the technical requirements of its imported products, according to the company.

To Produce Sulphuric Acid

Sulphuric acid will be produced for the first time by Reichhold Chemicals, Inc. upon completion of a 100-ton-a-day plant next March in Tuscaloosa, Ala., according to the company.



"TI-PURE"

Rutile Titanium Dioxide

R-110—Ideally suited for industrial enamels and interior air dry and baked finishes.

R-510—Outstanding for use in architectural finishes because of remarkable ease of dispersion. Also for exterior enamels where maximum chalk resistance is not desired.

R-610—For use wherever maximum chalk resistance is needed—as in exterior white and tinted enamels and tinted house paints.



YOUR DU PONT
White Pigments
Salesman ...

will be glad to give you complete information and to help select "Ti-PURE" pigments that best meet your requirements.

E. I. DU PONT DE NEMOURS & CO. (INC.)
Pigments Department
WILMINGTON 98, DELAWARE

"TI-PURE"

Anatase Titanium Dioxide

FF —For use where free chalking is desired as in self-cleaning white outside paints.

Y-CR —A semi-chalk resistant grade used widely in white outside house paints to control rate of chalking.

LO-CR—These Anatase grades **LW** are designed to help you meet your performance specifications.



Better Things for Better Living
... through Chemistry

DU PONT
WHITE PIGMENTS

HOW YOU CAN GET RID OF **FOAM**



WITH LESS THAN 1% ADDITION OF TRIBUTYL PHOSPHATE TO YOUR PRESENT FORMULATION

In *Rubber Base Paints* the effectiveness of Tributyl Phosphate as an anti-foam agent has been proved by the manufacturers who now use it in their formulations. This property of reducing foam is retained in paints throughout manufacturing, packaging and final application. Also in the final application a marked improvement in leveling properties and brushability is imparted to the material by Tributyl Phosphate. Only 1% or less of the total weight is usually required to give adequate anti-foaming protection.

In *Paper Coating Compounds* Tributyl Phosphate is efficient in eliminating foam. The finished product has no residual odor and very low retention as a result of adding Tributyl Phosphate.

In *Water Adhesives*, inks, casein solutions, textile sizes, detergent solutions, etc., Tributyl Phosphate also acts as an anti-foam agent.

As a *High Boiling Solvent* Tributyl Phosphate is used in preparing concentrates of weed killers. In lithographic inks, because of its high solvency for most natural gums and synthetic resins, it is an excellent solvent for components normally difficult to put into solution.

Other Uses for Tributyl Phosphate are as a plasticizer, as a wetting agent for pigments and to increase adhesion to metal and plastic surfaces.

Send today for technical data and samples of Tributyl Phosphate. No obligation.

MAIL THIS COUPON



OHIO-APEX DIVISION
FOOD MACHINERY AND CHEMICAL CORPORATION
NITRO, WEST VIRGINIA
DEPT. 33

☐ Send technical literature. ☐ Send sample of Tributyl Phosphate.

NAME

COMPANY

ADDRESS

CITY STATE

FIRE RETARDANT (From page 34)

Resin Applications

"Celluflex" CEF appears to have special merit in retarding the flammability of a wide range of plastic sheeting, molded articles and foams.

At a level of 5%, used as a secondary plasticizer, "Celluflex" CEF significantly retards the flammability of vinyl chloride sheeting and foam. The incorporation of "Celluflex" CEF in vinyl chloride plastisols results in a lower viscosity than where TCP is used and markedly decreases the viscosity build-up during storage. The use of this material makes it possible to produce foams of less density than when inorganic pigment type flame retardants are used.

Preliminary tests with polyurethane rigid foams indicates that 10% "Celluflex" CEF based on the weight of the foam will make the foam self-extinguishing. Figure 5 graphically illustrates the effect of adding this flame-retardant to foams of this type.

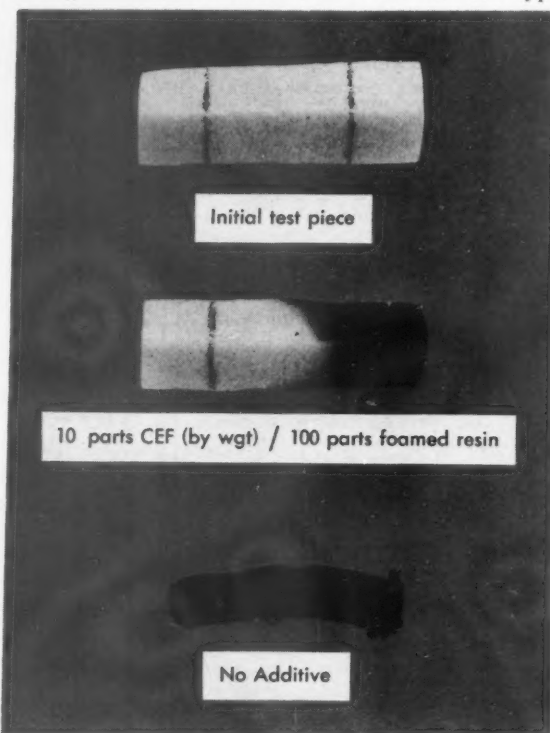


Figure 5. Effect of addition of Celluflex CEF on polyurethane rigid foams.

General purpose polyester resins can be made to equal the chlorinated polyesters in reduced flammability through the use of 10% of this chemical. The flammability of the chlorinated polyesters can be reduced even further by incorporating up to 5% of this material.

Laboratory tests are now in progress to determine the effect of this new flame-retardant on other resin types such as phenol-formaldehyde and polystyrene resins.

Still largely unexplored, the variety of possible uses for "Celluflex" CEF as a flame-retardant is indicated by the results of the investigations thus far completed and described in this article.

SURFA

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PAINT

TECHNICAL

Bulletins

SURFACE TENSION

An illustrated descriptive sheet discusses the uses of the new pocket size "Jiffy Loop" surface tension tester, which provides a quick-test method for taking accurate measurements under production conditions. Write to Pol-lack Products Co., 1628 E. 7 St., Brooklyn 30, N. Y.

REVISED RECOMMENDATION

"Simplified Practice Recommendation R144-55, Paints, Varnishes, and Related Products (Colors and Containers)," is now available.

This recommendation gives a maximum number of colors and sizes of container for a variety of oil paints, enamels, varnishes, water-thinned paints and related products. It covers trade sales items only.

This revision will bring the recommendation in line with current needs and industry practice. It provides for an increase in the recommended maximum number of colors of six items of oil paints and related products, and four items of water-thinned paints and related products.

Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., for 5 cents a copy. A discount will be allowed on orders of 100 or more copies mailed to a single address.

AUTOMATIC TRACTOR

Bulletin 552-1 describes and illustrates the "Guide-O-Matic" tractor, which moves trailer trains to prescribed destinations without an operator.

It presents a completely automatic trackless tractor-trailer system with no operator and no overhead conveyor installation. Motivation is provided electronically from signal boxes installed at desired locations in the plant, through the medium of a guide wire installed overhead along the tractor's route, or imbedded in the floor.

Bulletin will be mailed upon request by Barrett-Cravens Co., 628 Dundee Rd., Northbrook, Ill. **CENTRIFUGAL MIXER**

Neumann & Weaver, Inc., 22-12 Raphael St., Fair Lawn, N. J., a 4-page illustrated bulletin no. RKM-10 on Rheinhuette Centrifugal Mixer. The centrifugal mixer is used for unusually thorough mixing of chemicals; dyes; lacquers and solvents; paints, varnishes and thinners; slurries of gypsum, lime and similar materials; water and oil emulsions; and materials where speed is a requisite. Bulletin also presents specifications and test reports.

INVENTORY CONTROL

How inventory control can balance stocks and reduce costs for all manufacturing concerns is described in "Inventory Control for Manufacturers," a 16-page illustrated brochure released by Remington Rand Inc., 315 Fourth Ave., New York 10, N. Y.

The brochure, KD-406, describes the essentials of good inventory control and assists management in production, purchasing and sales activities. The manner in which the Kardex visible system exercises this control for either projected forecasts or past usage, is described and illustrated in detail.

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CAUSTIC SODA WALL CHART

A handy wall chart giving 37 specific, successful suggestions based on accumulated plant experience for safely handling solid, liquid and flake caustic soda has been issued by Diamond Alkali Co., Cleveland, Ohio.

The chart, 17" x 23", is printed in two colors and tinned on top and bottom with metal eyelets for convenient hanging. It concisely presents safety recommendations covering first aid measures, protective practices and equipment, and dissolving and unloading procedures.

CSMA PROCEEDINGS

Copies of the Proceedings of the 41st annual meeting of the Chemical Specialties Manufacturers Ass'n, Inc., held in New York City last December, are now available.

Containing a complete transcript of all general, divisional, and special committee meetings, the 210-page, book is priced at \$7.50 per copy postpaid in the United States and Canada, and \$8.00 per copy postpaid to other countries. Orders should be addressed to the Secretary, Chemical Specialties Manufacturers Ass'n, 50 E. 41 St., New York 17, N. Y.

ZINC

"How Zinc Controls Corrosion," a 32-page illustrated booklet has been published by the American Zinc Institute, 60 E. 42 St., New York 17, N. Y.

It describes the many ways zinc lengthens the life of steel products, and reduces maintenance costs. Drawings, charts, and photographs together with brief comments present the corrosion control characteristics of zinc coatings, pigments and anodes. An extensive selection of farm, industrial, marine and building applications is reviewed.

ENGINEERING SERVICES

Complete engineering and construction services available through the Chemical Plants Division of the Blaw-Knox Co., Farmers Bank Building, Pittsburgh, Pa., are explained in bulletin No. 2505, which outlines services from preliminary surveys to initial operation of process plants.

TEMPERATURE CONTROL

Bulletin F 6149-2, "Temperature Control Systems," is available to individuals interested in the application of automatic control to industrial process applications.

Included is a section on the selection of sensing elements and their correct use for the most satisfactory results. Also, a complete explanation of the various types of control systems, ranging from two-position "on-off" to proportional position with automatic reset. The question of where to use each for best control results is clearly answered. Barber-Colman Co., Wheelco Instruments Div., Rockford, Ill.

MATERIALS-HANDLING

Case-history reports on advantages of properly designed and installed materials-handling equipment of interest to paint and wallpaper handlers and suppliers and manufacturers are now available.

Four field reports, available from The Rapids-Standard Co., 342 Rapistan Building, Grand Rapids 2, Mich., contain facts and figures on how proper use of the equipment has cut operating costs, improved over-all efficiency, and provided increased profits.

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CHEMICAL INDUSTRY INDEX

"Chemical Market Abstracts", a monthly literature research service covering market news and statistics for the chemical industry, has published its first Annual Index, covering the year 1954. The volume contains more than 22,000 separate entries, classified under six major subject headings. It is available at \$20 from Foster D. Snell, Inc., 29 W. 15 St., New York 11, N. Y.

Information abstracted is indexed under the following major headings: company names, foreign countries, trade-marks, and industrial uses of chemicals. Further listings offer references to domestic and foreign patents in the chemical field and to unit-consumption factors as reported in the trade press.

PLANT MAINTENANCE

An up-to-date guide to problems of maintenance and plant engineering in American industry, "Techniques of Plant Maintenance & Engineering—1955," has been published by Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

The book is a report of the proceedings of the annual conference held concurrently with the Plant Maintenance & Engineering Show. A highlight of the volume is the text of more than 1,000 questions presented by 2,400 executives to the 56 experts, drawn from the nation's leading industrial plants, who led the discussions.

Twenty-three prepared papers were presented and all of them are included with full text, as well as with questions which followed. Sixteen roundtables, without prepared papers, are summarized.

The volume contains 218 pages, each 8½x11", bound in cloth on board. Sixty-one charts and diagrams are included. Price is \$7.50 postpaid.

PRIMARY AMYL ACETATES

Primary amyl acetates is described in a technical bulletin, F-8911, just released by Carbide and Carbon Chemicals Co., 30 E. 42 St., New York 17, N.Y. Physical properties, specifications and shipping data, uses, resin solubilities, and data on the performance of primary amyl acetates in nitro-cellulose lacquers are discussed.

CASTOR OILS

A comprehensive 16-page "Catalog and Product Guide of Castor Oils and Chemical Derivatives" has been issued by The Baker Castor Oil Co., Sales Promotion Dept., 120 Broadway, New York 5, N. Y.

The booklet describes the uses and suggested applications of over 90 castor oil products together with their more important physical and chemical properties in an easy-to-read tabular form. General classes of products covered include refined, blown, dehydrated, and hydrogenated castor oils, esters, fatty acids, metallic soaps and specialties.

Also included are a list of available technical literature and a series of useful charts on such properties as solubility, compatibility, and viscosity.

PAINTERS' CATALOG

A guide, M-50, outlining the correct spray painting equipment for the professional painter has been prepared by the DeVilbiss Co., 300 Phillips Ave., Toledo, Ohio.

The guide, in the form of a catalog, identifies the range of work which can be done, the paint materials that can be used with each complete outfit and offers a price range to suit each purse.



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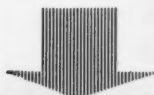
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INDUSTRIAL TANK GAUGES

Bulletin 6004, describing a new line of remote reading industrial liquid depth gauges, is now available from J. Jawett, Liquidepth Indicators, Inc., 43-22 Tenth St., Long Island City, N. Y. The 8-page bulletin presents comprehensive information on the operation and design of the "Petrometer Series 1400 Gauges," as well as on the method of selecting the right gauge.

INDUSTRIAL SOLVENTS

A folder on "Solvents" for every industrial need has been issued by Modern Mineral Solvents Corp., State St., Perth Amboy, N. J.

Modern storage facilities for tanker and tank car receipt and tank truck and drum deliveries within New Jersey, eastern Pennsylvania, southern New York and Connecticut on 32 large volume petroleum and coal-tar derived solvents and numerous petrochemicals are described.

COATING RESINS

A newly revised booklet describing "Plaskon" coating resins for paints, varnishes, lacquers, and allied products is available from Barrett Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N.Y.

The booklet presents complete characteristics of the following coating resins: alkyds, ureas, melamines, silicon-alkyds, modified phenolics, maleics, and ester gums. Typical applications for each are presented.

HALF-SECOND BUTYRATE

A quick-reference workbook available for people who formulate and sell lacquers, is a precise guide to "Half-Second Butyrate"; its properties, its modifications and applications. A concluding page lists suppliers from whom raw materials may be secured.

The 44-page, heavy-paper workbook is available from Eastman Chemical Products, Inc., Kingsport, Tenn. It contains the latest information on formulation and use of the new and interesting film-forming material—an expansion of original data sheets issued, augmented by more recent material developed by Eastman's Kingsport Laboratories and never before published.

PROGRAM CONTROL

Bulletin 1130, "Program Control of Process Variables," describes the methods and advantages of employing automatic, time-conditions control for many industrial processes and tests. A selection chart aids in choosing the right instruments for any program control application. Published by Minneapolis-Honeywell Regulator Co., Industrial Div., Wayne & Windrim Avenues, Philadelphia 44, Pa.

LATENT SOLVENT

A folder on "CS-203," a latent solvent for lacquers and thinners developed as a low cost substitute for normal butyl alcohol, has been

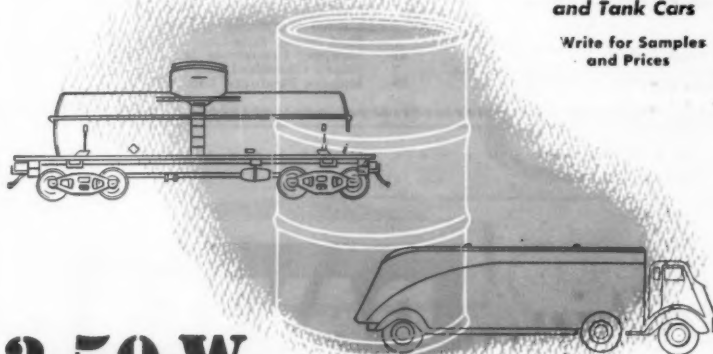
published by Celanese Corporation of America, Chemical Div., 180 Madison Ave., New York 16, N.Y.

Included are sections on physical properties, specifications, shipping and handling, solubility of resins in "CS-203," performance in nitro-cellulose lacquers, and toxicity.

TESTING INSTRUMENTS

Newsletter No. 9, published by the Gardner Laboratory Inc., 4723 Elm St., Bethesda, Md., describes, illustrates and gives specifications for a new Pressurized Viscosity Cup, Gardner Vertical Viscometer Cup, Chip Resistance Tester, new Ford Cup Stand, and the Blue M Constant Flow Portable Coil Cooling Unit.

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P. 58

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Initial.....	158°C.
50%.....	170°C.
95%.....	185°C.
End Point (Dry).....	191°C.
Flash Point, T. C. C.....	105°F.
Color, Saybolt.....	+26
Acid Wash Color.....	8
Corrosion.....	Free from Corrosive Compounds
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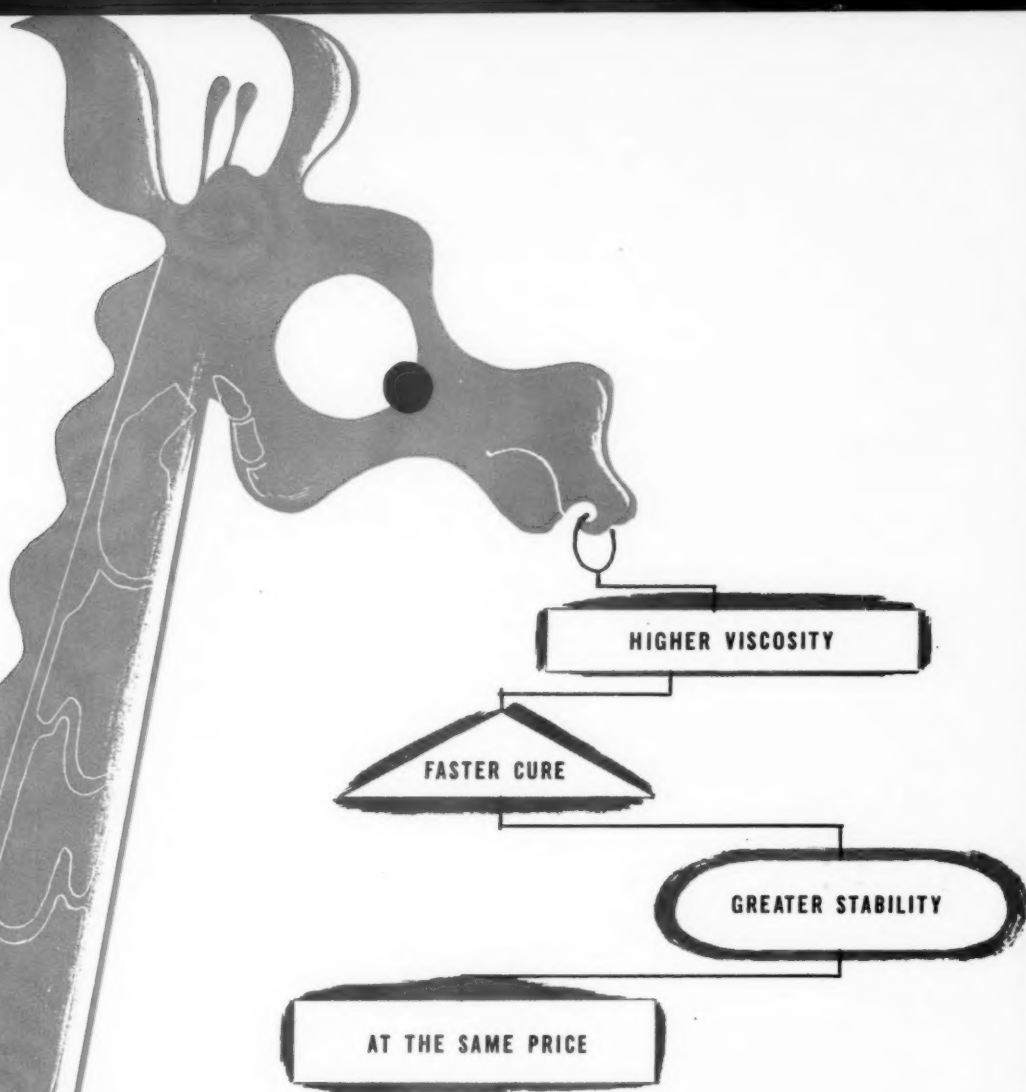
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How HYDRITE Kaolinites affect VISCOSITY in Semigloss Oleoresinous Enamels

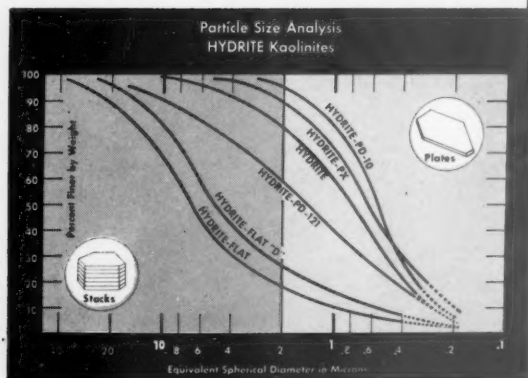
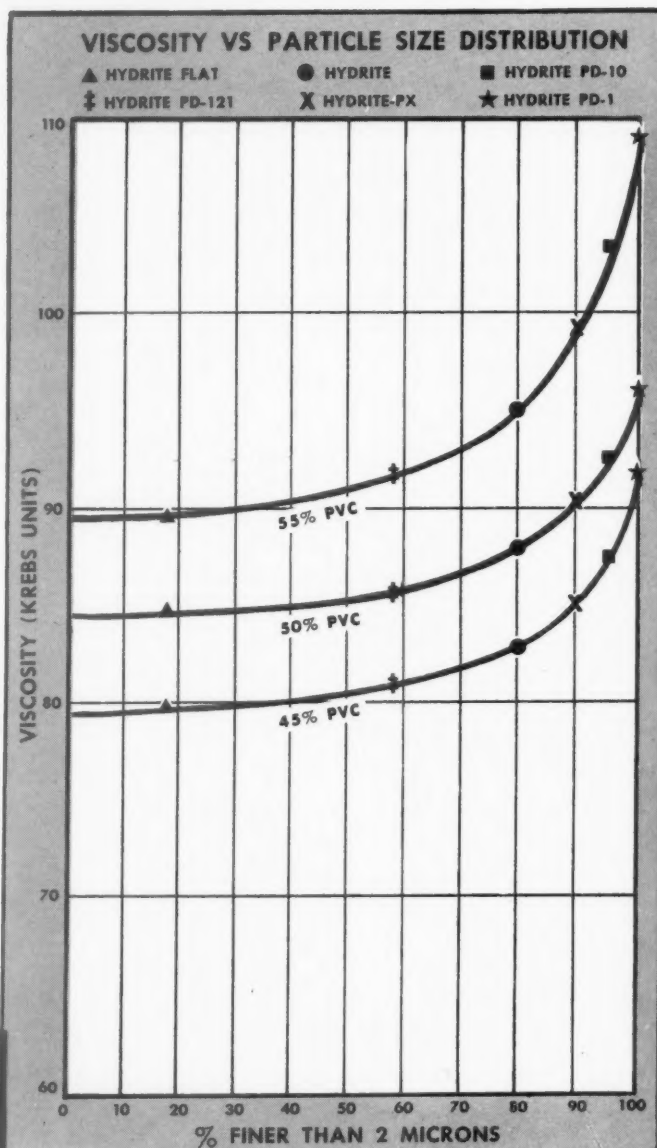
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Technical Service Bulletin TSBH-13, giving further details, is being prepared.

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